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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. V, No. 1 January 1994

Information Services—Then and Now

An INPUT Retrospective

In 1994, INPUT will celebrate its twentieth anniversary as a market research company. And what a 20 years it's been. Formed in 1974, INPUT was present at the birth of the information services industry, and since then we have enjoyed participating in what has been one of the most explosive periods of growth in both technology and American business.

This growth has been fueled by a serendipitous congruence of technological sophistication, economic stability, investor confidence, global awareness, and an easing of regulatory constraints, to the extent that today we speak of global markets, competition in the telecommunications marketplace and the almost limitless possibilities inherent in the communications and computing technologies now available to us - or just over the horizon.

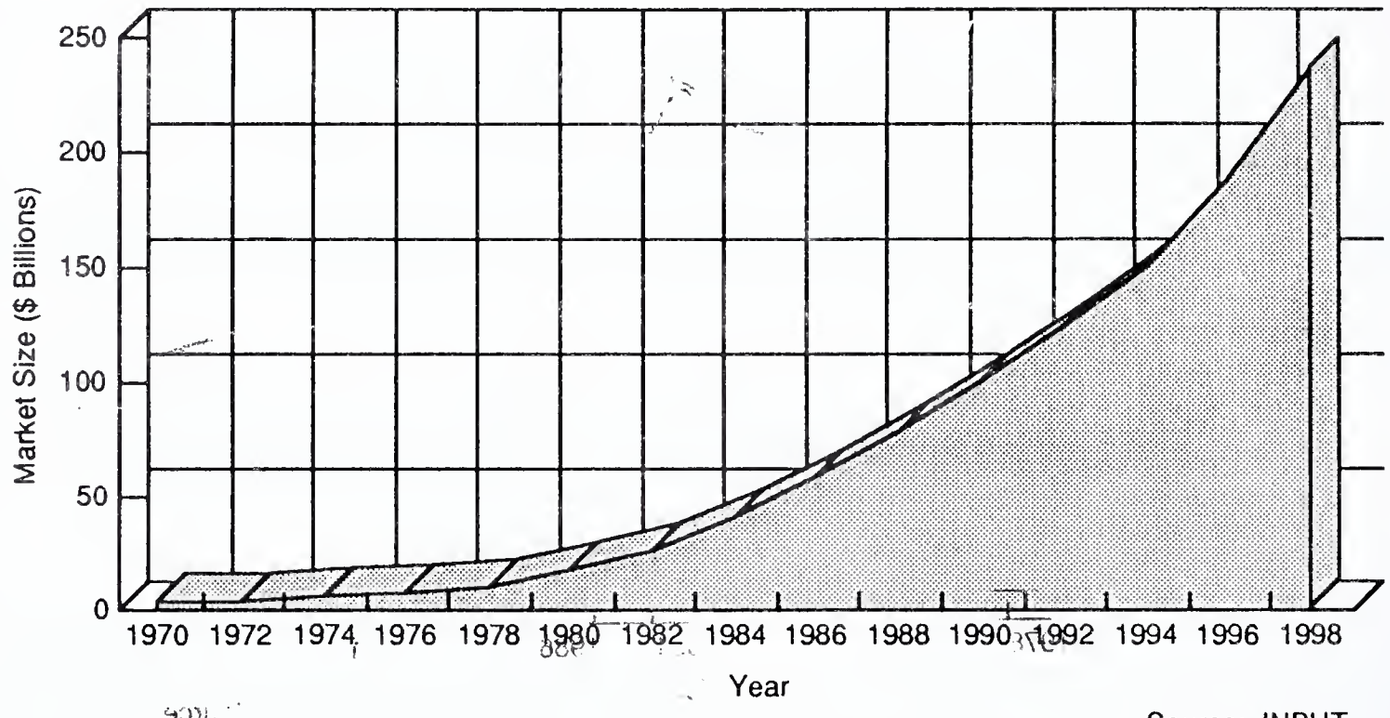
American business takes terminals and workstations for granted, and in fact, many people, at all levels of business activity, could probably not perform their job effectively without them. In decades past, we talked of computer literacy as a goal for American business. Not to worry. There's now a generation of students who regard a computer keyboard or mouse as a logical extension of their hand - just another tool, like the pencils and erasers of a prior generation. *(Note: An "eraser" is a device which performs the same function on a graphite recording that the* **Backspace** *or* **Delete** *key performs on a digital image.)*

Being a participant in the growth of the information services industry for the last 20 years has been exciting, challenging and rewarding. INPUT looks forward with confidence and enthusiasm to the millennium and the next 20 years.

This first Market Analysis Program research bulletin for 1994 examines the overall growth of information services, as measured by the U.S. market size and growth rates. As we do with our annual reports, INPUT also considers the five-year market size forecasts made during the last ten years (1983 to 1992), and notes how

Exhibit 1

Information Services Market, 1970-1998



Source: INPUT

the actual numbers recorded five years later varied from the original forecast.

The bulletin also notes the issues, concerns and forecasts made in the first of our annual information industry reports (1976), and considers how those observations compare to today's reality.

In the coming year, other INPUT Research Bulletins will continue to review the history of the information services industry, noting key events, market size and growth, changes in industry direction, and its competitive dynamics.

Industry Growth—Good and Steady

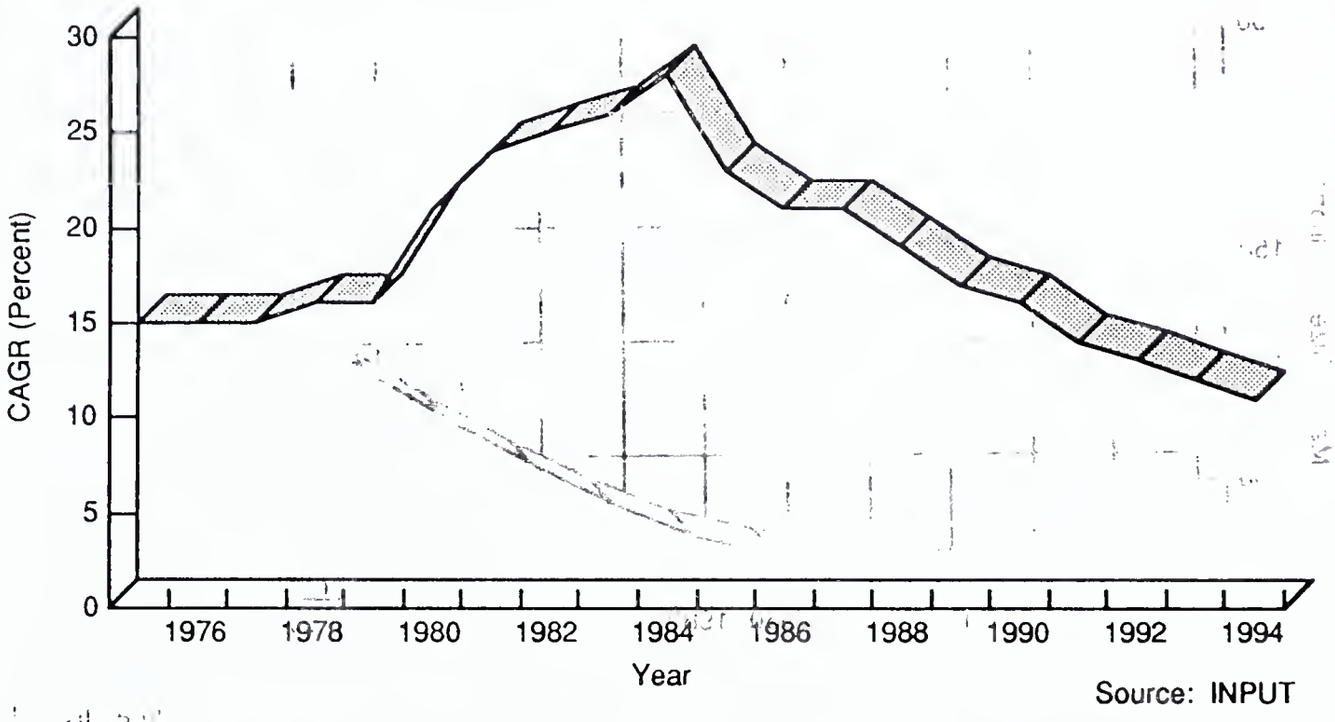
INPUT's archives show a fledgling information services industry just emerging in 1970 (the earliest year for which we have records), with a total U.S. market size of $3.2 billion. Exhibit 1 notes how the market has grown since then.

INPUT's Market Analysis Program tracks the information services industry and provides five-year forecasts of market growth. The 1993 forecast shows a current market size of $136 billion, growing to almost $237 billion by 1998. Extending the 1998 year-to-year growth rate of 11% to the year 2000 results in an annual market of almost $292 billion by the millennium. To assess the magnitude of growth since 1970, consider that in 1993 the information services market was 43 times its size in 1970, and will be 90 times as large as the 1970 market by the year 2000. The figures and the growth chart speak for themselves. The information services industry is healthy and continuing to grow at a steady pace.

Exhibit 2 shows the five-year compound annual growth rates (CAGR) from 1975 through 1994. These figures were derived by taking the actual market size numbers

Exhibit 2

Information Services Market: 5-Year CAGR



Source: INPUT

used for Exhibit 1, and determining compound annual growth rates for five-year periods starting with 1970 to 1975 and ending with 1989 through 1994.

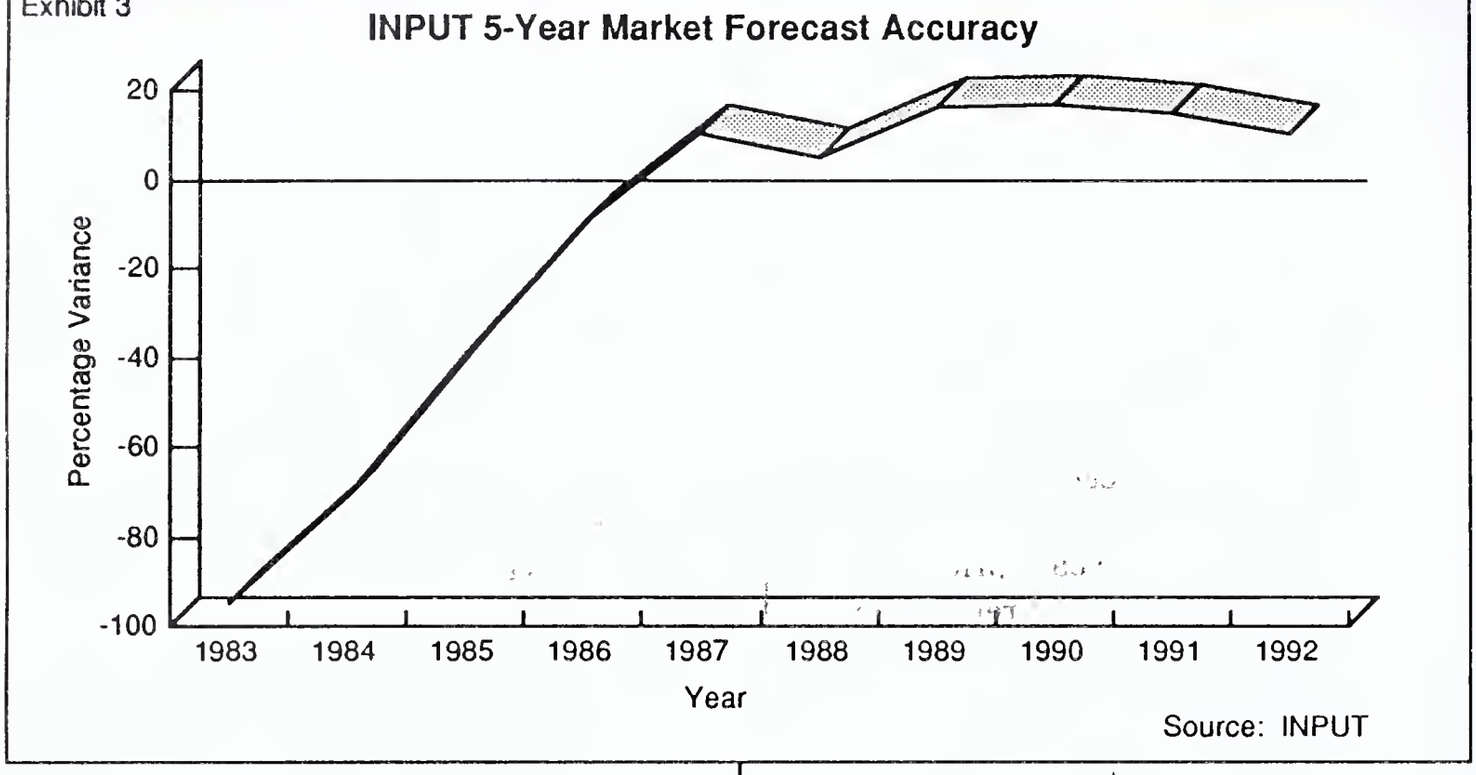
The figures show some flattening, at a 15% to 16% CAGR, from 1975 through 1979, as the industry stabilized and moved through the slow economic period in the mid-1970s. Aggressive growth returned in the late 1970s and lasted through 1984, when it peaked at a five-year CAGR (for 1979 through 1984) of 28%. Since then, as a result of the steady increase in the size of the market and the leveling effects of inflation, the sliding five-year CAGR declined to 23% in 1985 and has slowed to 11% in 1994 (for the period 1989 through 1994).

The 11% figure for 1989 through 1994 occurred during the recent prolonged period of severe economic slowdown, and is a very respectable growth rate that reflects the fundamental strength of the information services industry — even during periods of economic uncertainty. INPUT currently estimates the projected five-year CAGRs through 1998 will be in the 11% to 12% range, with stronger growth occurring as the year 2000 approaches and businesses position themselves for a fast start in the new millennium.

From the viewpoint of long-term growth, the increase from $3.2 billion in 1970 to $236.7 billion in 1998, yields a phenomenal 28-year CAGR of 17%.

Considering the ups and downs of the economy over the last two decades, the wide swings in inflation rates and growing competition from off-shore service providers, the U.S. information services industry has proven itself to be a solid, steady component of the American (and worldwide) economy.

Exhibit 3



INPUT's Report Card

INPUT has always maintained that if you are in the business of forecasting market size, you should periodically evaluate how well you are doing. In the Market Analysis Program, INPUT does this yearly for each of its annual industry and market reports. The actual values for last year, and the final year of last year's five-year forecast, are compared to the values for those years in this year's forecast and significant differences are explained. This evaluation, called our MAP Database Reconciliation, is contained in the appendix at the end of each market report. We call it our report card.

As part of this retrospective, we decided to look at the total U.S. information services market five-year forecasts published by INPUT for the last ten years. We considered only the fifth year of each forecast—e.g., the year 1983 in the 1978 report, *U.S. Information Services Market: 1978-1983* — so we could determine our performance on long-range forecasting. We evaluated every forecast where we could determine a fifth year actual market size. We then compared the actual market size to the forecast market size to determine how well we did. The results are summarized in Exhibit 3.

Values below the X axis show that in a forecast for that year (made five years before the year noted on the chart), we underestimated the market's size. Values above the X axis indicate that five years earlier, we overestimated the market size for those years.

As can be seen from the chart, the market consistently grew faster than we estimated in the early years, frequently growing to twice the size we had forecast five years

earlier. Contributing to our underestimation of the market's long-range performance was the explosive growth of the industry, rampant inflation (remember CD's that paid a 15% yield to maturity?), and the series of economic perturbations occurring during this period. As the industry stabilized in the early- and mid-1980s, our forecasts improved as a result of that stability and also as a result of our having a larger historical database and better forecasting techniques.

The forecasts made five years prior to each of the last six INPUT annual reports on information services industry size, have slightly overestimated the market by 5% to 17%. Stated another way, our long- range forecast accuracy varied from 83% to 95% of the actual market for the last six years. Given the complexity and growth of the information services market, and the fact this performance occurred during the longest period of economic slowdown for U.S. industry since the second World War, INPUT is pleased that the accuracy of its long range market forecasts has averaged 88% over the last six years. And we expect it to get better.

History 101a - The Information Services Industry in 1976

In INPUT's first annual report to its clients, issued in 1976, we noted the following industry trends, events and issues. INPUT's 1994 observations are contained in the parenthetical comments following each entry:

- The main limitation on industry growth was the ability to acquire, train and retain skilled personnel. (*Still a significant factor for newly emerging skills such as business integration proficiency, but the pool of resources has grown dramatically since 1976.*)

- Software availability was identified as a limitation. Users were advised to develop their own applications software. (*They did, at first on their own, and eventually with the help of the professional services firms. Today, the professional services software development market is approaching $14 billion. Nice growth!*)

- Batch processing and professional services were regarded as unexciting and unprofitable when compared to the darling of the 1970s—remote computing services—e.g., timesharing and remote batch services. INPUT disagreed with this belief and felt both batch processing and professional services offered a major opportunity. (*Pure batch processing never did achieve a significant position in the market, but WOW! how professional services grew and grew and grew! To almost $23 billion in 1994.*)

- Vendors were advised to maintain an image of technical expertise and reliability if they wished to grow. (*Today, INPUT research shows users select vendors with the best technical and industry knowledge and the best reputation. Today, as then, it's a major competitive advantage for a vendor to have demonstrable knowledge of an industry or technology and a reputation for doing good work. Fundamental truths never change.*)

- The main competition for services companies was expected to come from in-house processing. (*And, in truth, it did for many years as IT managers decided whether to invest budget dollars in internal resources or outside services. Today, however, the IT manager is defending why corporate dollars should support an expensive internal dedicated resource when cost-effective outside services offer to fix costs, guarantee reliability and ensure both growth and the availability of the latest technology for their client's use. In addition, the IT manager must now compete with the departmental users who also want to determine how their IT needs are to be satisfied.)*

- Facilities management (FM) will depend upon the importance of EDP to an industry. Logical candidates for long-term FM *(now called outsourcing)* growth include the banks and insurance companies because of their dependence upon information management. (*Today, the banking and finance and insurance industries are the first and third largest users of outsourcing services, of the fifteen industry markets followed by INPUT. Enough said.*)

- Word processing and data processing will be combined *(said INPUT's annual report in 1976)*, creating an information processing environment with opportunities for new software products. (*Talk about understatement! First there were dedicated systems like WANG and the IBM Mag Card Selectric, then mainframe-based systems such as IBM's PROFS, and finally PC-based systems. Today, word processing and data processing are almost completely merged, especially in environments such as Microsoft's Windows or client-server systems. Most word processing now takes place on networked PCs with E-Mail links and spreadsheet and database access. Yes, there are certainly opportunities for new software products!)*

- INPUT stated that because of changes in hardware, computer services companies would have to take an active and creative role in specifying and using the hardware, as opposed to being reactive *(as was the case in 1976)*. This admonition applied to mainframes, terminals and peripherals. (*This was INPUT's first identification of a systems integration need. In 1994, SI is an $11.5 billion industry.*)

It's always enlightening, and sometimes humbling, to see how well advice and conclusions, formed 18 years ago, have stood the test of time. In general, we're satisfied with most of our early predictions and advice and believe the information services industry has grown pretty much the way INPUT, and others, felt it would. There were, of course, a few areas in which our observations were not as accurate as we would have liked. For instance, the batch processing market never represented a major opportunity, as we had thought, and competition for information services now also comes from other information service alternatives, and not just the internal IT department. Oh well....

More to Come

INPUT hopes that you have enjoyed this retrospective and the industry size and growth figures are useful to you in your own analyses of market or industry history.

In the coming year, INPUT plans to issue two or three additional Research Bulletins that reprise this wonderful information services industry in which each of us is a player. For instance, we'll consider the competitive dynamics over the years and look at key industry players, then and now.

INPUT looks forward with pleasure, anticipation and a bit of excitement to see what the information industry will accomplish over the next 20 years. We expect that you do too.

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INPUT® Research Bulletin

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A First Look at the Worldwide Information Services Industry

Overview

In the shadow of significant global events, the worldwide information services and software market continued growing in 1993. Overall, the market grew 6%, from $255 billion in 1992 to $271 billion in 1993. Unfortunately, this growth represents the smallest year-to-year increase reported during the five years INPUT has published its *Worldwide Information Services Forecast*. Now in its fifth edition, this unique report examines the information services market at the global, regional and country level for 1993 through 1998. Discussed are the economic and political factors which currently drive or inhibit the use of software and services.

Overall, the global economy in 1993 continued to be hampered by the lingering effects of the recession which hit so hard in 1992. In spite of the sluggish economic climate, however, a series of powerful events made 1993 a memorable year.

The North American Free Trade Agreement (NAFTA), for example, generated considerable controversy in the United States. The pact between the U.S., Canada and, now, Mexico has some industry and technology leaders concerned that NAFTA will further diminish the American job market, raise unemployment and dilute the country's competitive edge.

On the other side of the Pacific, Japan, South Korea, and other members of the General Agreements on Tariffs and Trade (GATT) consider NAFTA a huge potential threat to their industries, including automobile and computer hardware manufacturing. Ironically, U.S. semiconductor manufacturers made impressive headway in 1993 by capturing roughly 20% of the Japanese market during 1993.

Japan's economic and political difficulties continued in 1993. As part of this preliminary report of INPUT's global findings, a discussion of the Asia/Pacific region in 1993 is presented below, followed by a review of Latin America.

Asia/Pacific

The information services market for Asia and the Pacific Rim decreased 3% between 1992 and 1993, from $48.6 billion to $47 billion, despite an optimistic economic outlook for most of the region.

Much of this decline can be attributed to the recession in Japan, which still represents over 80% of the Asia/Pacific market. In Japan, the recession has caused many corporations to curtail or halt spending on large-scale projects, including those that are information services-related. As a result, the information services market fell 6% in 1993 to $39 billion. Making up 30% of the market, Japan's banking and insurance industries are the country's largest software and services users, and continue to feel the blows from a recession that drove unemployment up to 2.5% in 1993. Politically, the coalition government of Prime Minister Hosokawa is under tremendous pressure to revitalize the economy, despite Japan's protectionist policies.

The "Four Dragons"—Hong Kong, Singapore, South Korea, and Taiwan—represented only 8% of the 1993 market, and all achieved double-digit information services growth over 1992. The South Korean software and services market, for example, grew more than 35% in 1993 compared to 1992. Part of this is attributable to President Kim Young Sam's economic policies which have shifted emphasis from economic stability toward economic growth in numerous areas, including high technology. Technology is equally important to Singapore, where the government's National Science and Technology Board has announced plans to increase national research and development spending for high technology, including information services, to 2% of the GDP by 1995. (See Exhibit 1).

Hong Kong and Taiwan are expected to continue robust information services growth, which will increase at a compound annual growth rate (CAGR) of 13% and 15% respectively through 1998. China, however, continues to be a mutual source of tension for these two countries. By 1997, Hong Kong will revert to the mainland and Prime Minister Chris Patten is already feuding with the Chinese government over pro-democratic political reforms. Taiwan suffers from an ailing national infrastructure which will require almost a quarter trillion dollars in government aid. This, and an increasingly expensive labor force, is making Southern China an attractive manufacturing base for major Taiwanese corporations. Although unwillingly, both Hong Kong and Taiwan are becoming Chinese partners in what could turn into a major economic alliance in the coming century.

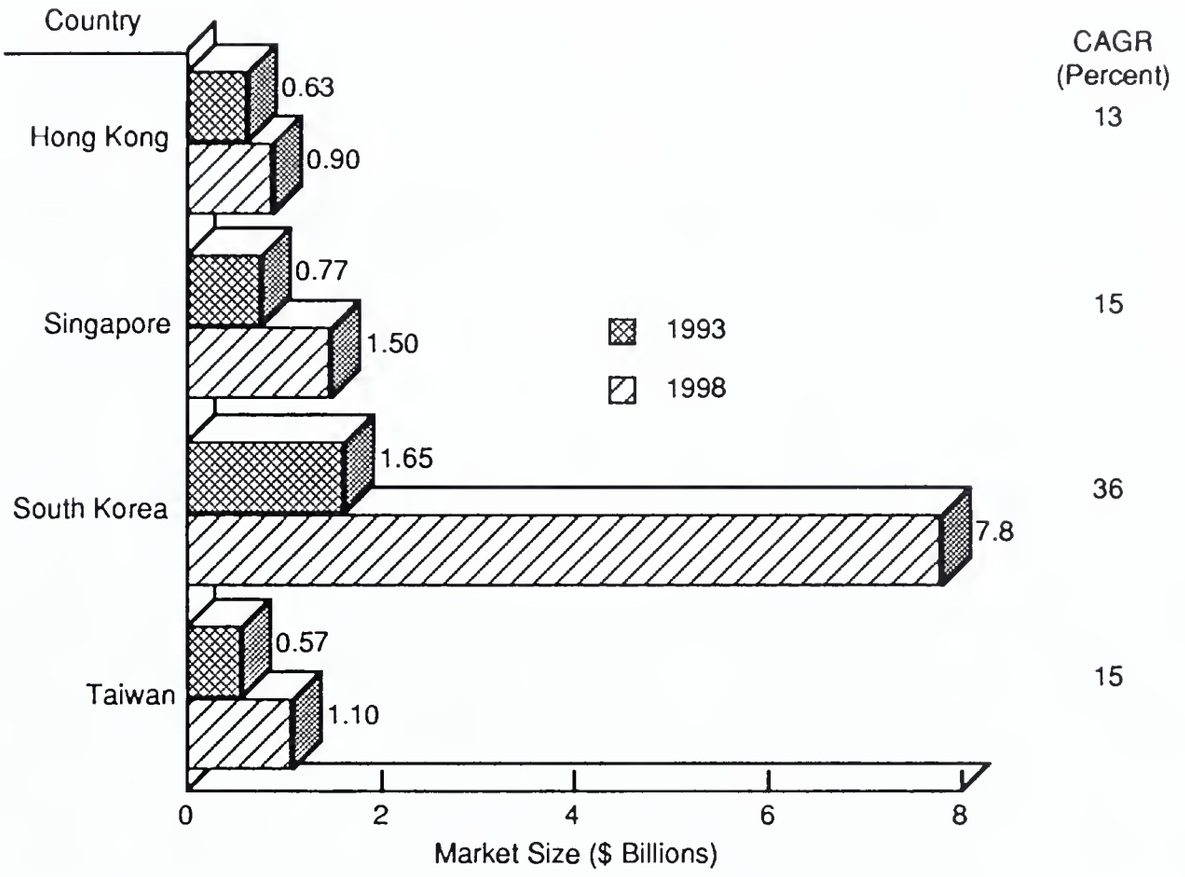
Latin America

Compared to Asia, the Latin American region represented a smaller information services market with a better growth rate. From a value of $4 billion in 1992, the Latin American market grew 16% to $4.7 billion in 1993. Over the next five years, the software and services in the region will grow at an 18% CAGR. (See Exhibit 2).

This admirable present and future performance is a direct result of efforts in individual countries to focus more intently on reducing inflation, spurring economic stability and growth and improving the

Exhibit 1

Asia/Pacific—"The Four Dragons"

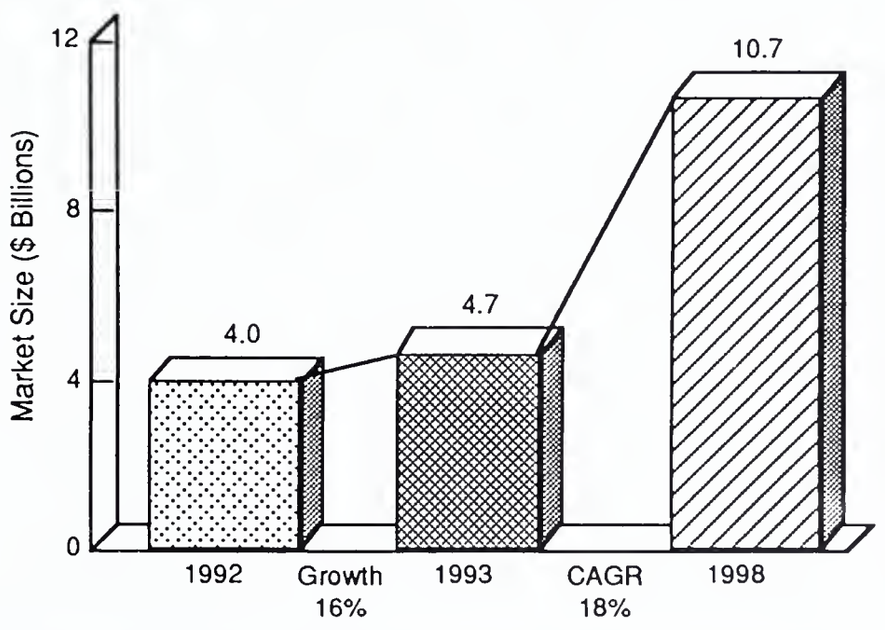


*Note: Hong Kong is forecast only to 1996, after which it will become a protectorate of the People's Republic of China.

Source: INPUT

Exhibit 2

Latin America IS Market Forecast, 1993-1998



Source: INPUT

technology base. Historically, countries like Brazil have been hindered technologically by government tariffs which have discouraged the importing of foreign hardware and software technology.

Beginning with Mexico's ratification of NAFTA, there was significant progress in the region in 1993 toward substantially reducing tariffs and establishing free-trade zones, notably in Brazil and Venezuela. This will serve U.S. software and service companies well, as they have had great difficulties penetrating markets with tariffs as high as 20-25%.

This loosening of trade restrictions is proceeding concurrently with continued heavy telecommunications systems investment, in countries like Brazil and Mexico. Along with privatization, telecommunications investment is a component of an regional trend toward general infrastructural improvement.

This is important in Latin America because of its ever growing interaction with the U.S., Canada and Europe. Also, with the economic difficulties in Japan and Taiwan, countries like Mexico and Brazil see an opportunity to successfully compete with Asia for foreign manufacturing business, such as computer platforms and electronic goods.

To get further information on, or a copy of, the *Worldwide Information Services Forecast, 1993 - 1998*, please contact your nearest INPUT office.

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Vol. V, No. 3 (Rev.) February 1994

Disaster Recovery Resources Severely Tested, Meet the Challenge

The week of January 17-23, 1994 will be long remembered by disaster recovery firms and the many clients who have need of those services. Within those seven days, nature provided not one, but three opportunities for recovery services firms to deliver according to their contracts:

- The Northridge, California earthquake, which has become one of the most expensive disasters in U.S. history
- A record cold wave in the mid-Atlantic states which caused intermittent power outages
- Broken water mains in Atlanta

This was an historic triple-threat to disaster recovery services. Could major providers such as Sungard, Comdisco and ISSC respond in three separate regions at the same time? Happily for their customers, the answer seems to be—yes. INPUT's surveys of subscribers and providers showed recovery operations were carried out promptly, with considerable innovation and with a minimal amount of IT operational disruption. This performance by several vendors confirms the coming of age of the disaster (or business) recovery services industry. It is indeed hard to imagine a major corporation or government body which does not have an active recovery plan, or else is diligently pursuing one, today.

According to the major vendors, there were at least 23 firms in the L.A. region which declared disasters and received recovery assistance of one kind or another. As many as twice that number notified their vendors of being in an alert status, but did not proceed to a disaster declaration.

Disasters provide stimuli for recovery services growth

The smooth recovery implementations during the January crises emphasizes both the maturity and significant resources of

the major service providers. This is a healthy market, in fact, it has to be a *growth* industry, when one considers the seemingly endless stream of disasters which have afflicted the U.S. in recent years:

- The 1994 and 1989 California earthquakes
- The 1993 World Trade Center bombing
- The midwestern floods, summer of 1993
- Hurricane Andrew, 1992
- Floods in Chicago, 1992
- Hurricane Bob, 1991
- Wall Street electrical fire, 1990

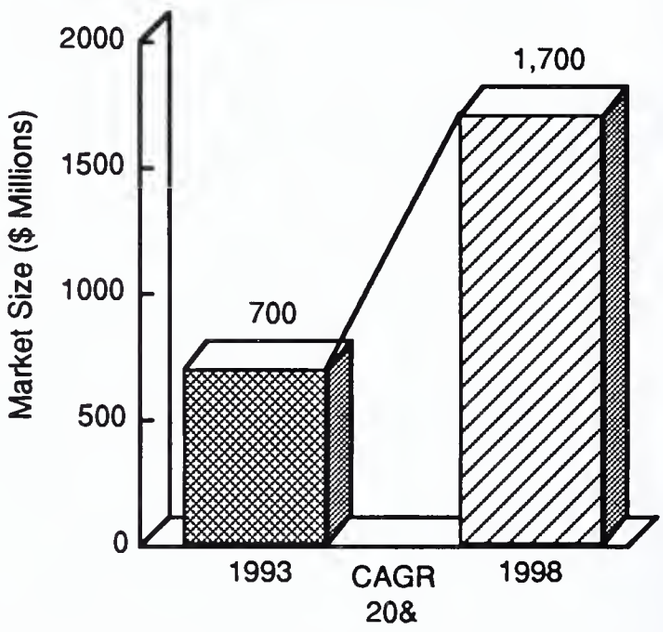
In forecasting the U.S. market for disaster recovery services, INPUT classifies this as part of "other" processing services, and reports the projections in the annual Processing Services Market Forecast Report. INPUT regards U.S. disaster recovery services as a $700 million market today, and forecasts growth at a 20% CAGR over the next five years, as shown in Exhibit 1.

Cost of downtime surveyed

In a 1992 survey of IS executives by Stratus Computer, Inc., the importance of recovery capability for large online systems was highlighted by the following findings:

- In 1992, computer down-time cost American businesses over $3.8 billion in lost revenues and productivity.

Exhibit 1



- Each system outage averaged 4 hours and cost companies approximately $329,000 in lost revenue and worker productivity.
- The average hourly revenue lost from such downtime is $78,000.
- Three hundred fifty five worker hours are lost for each hour of unscheduled online system downtime.
- Major businesses lost over 38 million worker-hours due to downtime, or $444 in annual wages.

Clearly, these kind of numbers emphasize that the increasing reliance on real-time systems for mission-critical applications will also force pro-active disaster planning.

Value-added services offered

Value-added recovery services are being rolled out by all the market leaders. As competition increased during the last few years, the provision of hardware at hot sites became something of a commodity. So, innovative vendors have moved to differentiate themselves by providing services that expand well beyond the original concept of hot and cold sites for large-system recovery, and offer a variety of new services:

- Mobile computing vans have proven invaluable in delivering computing power to remote customer sites, in a very flexible way. CSC CompuSource now offers this service

- Business recovery consulting has become a fast-growing specialty, providing disaster planning services for potential clients.

- Multivendor partnerships are forming to offer recovery services for heterogeneous systems, such as mixed mainframes and minicomputers. ISSC has specific agreements with Digital Equipment, Hewlett-Packard and Wang to deliver such capabilities.

- Requirements are growing for international recovery services, covering the multiple locations of a single enterprise. ISSC is aggressively promoting its abilities in this area.

- Global network proliferation has opened up a market for network recovery on an international basis.

- Client/server recovery services are now appearing, as a natural byproduct of the industry swing to client/server configurations

- Services are not being strictly focused on IT recovery, although that remains the major thrust. Comdisco now provides office relocation services, and work area recovery facilities as well. INPUT expects most vendors to broaden their services lines to meet other business recovery needs, beyond the current IT base.

Can tele-commuting services be far behind?

Given the horrendous traffic jams that will plague Angelenos for some months or years, it seems likely the growth of tele-commuting facilities may increase. Such services already exist, but there is minimal demand for them, probably because of employer (and some employee) concern about the loss of personal contact and positive control of the working environment. But the IT world is well-suited for such services, given the portable tools of the job and the proliferation of high-speed voice/data networks. It seems only a matter of time before these operations begin to experience real growth nationwide. Employee morale boosts, and the potential of improved productivity due to reduced travel time, will be the factors leading more firms to eventually experiment with this approach.

Disaster recovery market is well concentrated

The U.S. market for disaster recovery services is well-covered by several leading vendors with strong market positions. When the revenues of Comdisco, Sungard, ISSC and CSC CompuSource are combined, INPUT estimates 65% of the market is taken. While a number of other players have reasonable market shares, they are currently occupying smaller product or geographical niches. Following is a quick snapshot of each of these market leaders.

Comdisco

- The industry revenue leader, with $193 million in sales in 1992, and $216 million in 1993, a 23% growth rate
- Offers office relocation and work area recovery services
- Handled 6 declared disasters and 21 alerts during the L.A. quake
- New focus on local, state and federal government agencies. Recently obtained a $50 million blanket contract from the Federal government
- Streamlined the Disaster Recovery division with a consolidation and redeployment of resources in 1993

Sungard

- $95 million in 1992 revenues, anticipated 20% growth in 1993
- No longer just focusing on IT recovery; also offers business recovery services, with Automatic Call Directors (ACD) and workgroup recovery services

IBM/ISSC

- Now competing with Sungard for #2 revenue position in the industry
- Experienced about 40% growth in 1993, looking for even more in 1994, primarily because of new services introduction
- Built recovery mega-center in Gaithersburg, MD, claimed as the world's largest such facility. Used also for bench-marking new systems, so clients can gain early experience with these products.
- Pushing international capabilities, with facilities available in 41 countries
- Offering joint recovery services with Digital, HP, Wang
- Introducing new consulting service in disaster planning

CSC CompuSource

- Growing at about 20% per year
- Offers niche product, recovery services on smaller mainframes
- Features mobile data center availability
- Specializes in item-processing recovery

Conclusions

The relatively small disaster recovery market will grow rapidly during the 1990s. Most large organizations are already sensitized to the need for IT recovery planning and execution capability. Each new disaster just amplifies the need.

Although the U.S. market is well-concentrated, there is still room for new entrants with well-differentiated and carefully focused services, especially value-added offerings that go further than just IT hardware availability.

The international market will grow even more rapidly than the U.S. and vendor's ability to serve multi-national needs will be an added competitive advantage.

The advent of more client/server computing installations will create opportunities for new entrants who can mirror these configurations in client/server recovery centers.

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- **Customer satisfaction levels**
- **Competitive positioning**
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- **Peer position**

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. V, No. 4 March 1994

The PowerPC Low-Cost Power to the People?

The gauntlet has been hurled and the challenge acknowledged. IBM, Motorola and Apple have jointly developed a microprocessor, the PowerPC chip, to compete directly with Intel's Pentium processor in the high-end workstation/PC market. What is this new RISC-based chip, how does it differ from Intel's Pentium technology, and is the difference important? Even more significant, what does this new entry in the PC wars mean to the PC marketplace, and what are the implications for information services users and vendors? This research bulletin will explore these issues and assess the impact, if any, that the new processor can be expected to have on the information services marketplace.

What is the PowerPC Processor?

The PowerPC is a new family of RISC-based (Reduced Instruction Set Computing) processors from the team of Apple, IBM and Motorola. It offers 32-bit processing and the initial model, the PowerPC 601, will run at clock speeds of 50, 66 and 80 MHz. RISC processors typically offer rapid program execution. Because they segment instruction execution into a series of manageable steps, they facilitate the implementation of scalable software that can execute simultaneous instructions. Production costs for the PowerPC chips tend to be less than for non-RISC chips, primarily as a result of their smaller size, but also because of their efficient design.

The importance of the PowerPC is not that it is the first RISC processor aimed at the workstation/PC market. It's not. Digital's Alpha, Sun's SuperSPARC+, Hewlett Packard's PA-RISC, MIPS Technologies RS series and others have all offered RISC processors, but they were aimed initially at the UNIX workstation market.

The advent of Microsoft's Windows NT minimized the Windows operating environment's traditional bias toward Intel processors, since support was also provided for Digital's Alpha and MIPS R4000 architectures.

In its initial implementation, the PowerPC 601 will offer twice the performance of

Intel Pentium processors for half the price. Its price/performance attribute and the stature of its backers are the main reasons the PowerPC has caught the computer industry's attention. There now appears to be a potentially viable alternative to Intel's dominance of the workstation/PC market. That, in a nutshell, is the importance of the PowerPC. The potential it offers for choice.

PowerPC versus Pentium

The PowerPC RISC processor's advantages follow logically from its design. It costs less to manufacture, therefore it is currently cheaper than the Pentium chip. It has a design that allows for multiple instruction 32-bit path access and provides improved memory access speeds. Therefore, it is currently faster than the Pentium chip. At 3.6V, its operating voltage is less than Pentium's 5V, thus alleviating some of the heat concerns that initially plagued Pentium. The 3.3V version of the chip, the PowerPC 603, is a design optimized for laptops and PDAs (Personal Digital Assistants). It will be available in mid-1994.

The PowerPC does not have to go looking for a market. Apple regards it as the successor to its long-time Motorola 68000 family of processors (which have reached their performance limits), and plans to use the PowerPC chips in all Macintosh systems within two years. In the short term, IBM is installing PowerPC processors in its RS/6000 workstations that run AIX. For the long run, IBM is serious enough about the PowerPC to give up its license to manufacture Pentium processors, although this is not as immediately indicative of intent as it may appear. Manufacturing the Pentium chip would require an IBM investment estimated to be in the hundreds of millions—an additional cost they don't need at the moment. In fact, if IBM should need Pentium chips, they could always buy them from Intel. IBM also intends to marry Kaleida's Malibu multimedia chip with the PowerPC, thus signaling their ability to offer a high-performance, low-cost IBM multimedia system in the $2,500-3,000 range. Due to its inherent performance characteristics, INPUT expects the PowerPC to be particularly strong in the multimedia market.

On the surface, based upon just price and performance, the PowerPC chip appears to have a clear advantage over the Pentium processor. Performance, however, is a term that must be defined. The "twice the performance" attribute of the PowerPC is based upon its running software in native mode—that is, using the PowerPC's own operating environment. In order to run DOS and Windows applications, the PowerPC must use emulation, an operating mode that reduces performance to less than that achieved on Intel processors running the same applications. Considering an estimated 75% of the software on the PC market is designed for a DOS or Windows environment, this can be a significant impediment.

To clarify this key point, if you want to run the applications that you're using today under DOS or Windows on personal computers using the new PowerPC technology, you must do so in emulation mode, and you will almost certainly see performance below what you are currently experiencing. When Apple introduces its new PowerPC Macintosh systems (mid-July at the latest, March at the earliest), it expects to have only 50 programs available

that were designed specifically for that environment. Given Apple's commitment to the PowerPC as a successor to the Motorola 68000, and the strong loyalty of Macintosh users, vendors should soon be offering a growing family of software products to run on the new platform. Until then, DOS and Windows will run on PowerPC-based Macintosh systems using Insignia Solutions' SoftWindows.

What Does the PowerPC Mean to the PC Marketplace?

Today, to most home users and the majority of the business world, the introduction of the PowerPC will have no immediate benefits. Why? The processing power is only useful if you need it, and the price/performance benefits disappear if you're currently running DOS or Windows applications which must run under emulation on the PowerPC platform.

Benefits to the high-end workstation/PC market can be more substantial. Those who must have the power of Pentium technology to run Windows NT now have more alternatives, including the MIPS processors, DEC's Alpha systems and the PowerPC.

It's a truism than as microcomputers become more powerful, the applications developed for them require more power. It's like closet space—the more you have, the more you need. The current trend in applications technology is multimedia. Not only is industry excited about its possibilities, but home computer users, eyeing the potential of the proposed national *electronic superhighway*, can also see its potential for graphics-intensive home entertainment alternatives (e.g., animation, interactive games).

The burgeoning client/server market is another CPU-intensive environment where the power of the Pentium or PowerPC will be necessary to drive the growing family of applications. These are just the tip of the iceberg. In the next few years, fertile imaginations and business needs will define and implement more and more computer-intensive applications. Inevitably, the power of the Pentium and the PowerPC will be regarded as a standard requirement, much as the speed of the Intel 486 is considered a standard today.

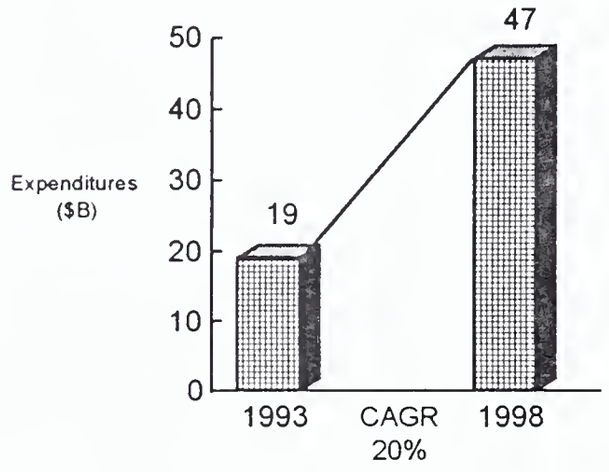
Intel Inside isn't going to be replaced by *PowerPC Plugged-In*. Both technologies, and others noted above, should flourish in the power-hungry 1990s. The difference is, that for high-end, general- and special-purpose computing, there is now a choice.

So What's in it for Information Services?

In its latest market summary, the *U.S. Market Forecast Compendium, 1993-1998*, INPUT identified the markets for eight product/service categories that can be sold to the information services marketplace. Taken together, segments of three of these products/service groupings define the major portion of the information services marketplace represented by expenditures for workstations and PCs. The three market segments are desktop services (part of the Outsourcing category), and the workstation/PC segments of the System Software and Applications Software product groupings . In 1993, these three segments together represent a $19 billion market, and as shown in Exhibit 1, they will grow at a 20% compound annual rate to $47 billion in 1998.

Exhibit 1

Information Services Expenditures Directly Attributable to Workstation/PCs



Source: INPUT, 1993

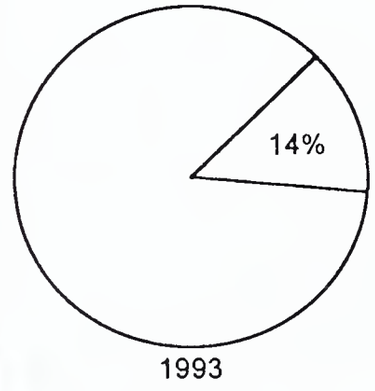
If nothing changes in the dynamics of the workstation/PC marketplace, those markets will grow from 14% of all information expenditures in 1993, to 20% in 1998. (See Exhibit 2.) More significant, however, is the fact that of the 25 market subsegments tracked by INPUT, the three workstation/PC market segments are in the top five (highest) growth rates. (See Exhibit 3.) The three market segments (shown in **bold** type), will grow at five-year compound annual rates (CAGRs) of 21%, 20% and 19%. For comparison, the U.S. information services industry will grow at a 12% rate during the same period.

As demonstrated by market share and growth rates, the market for products and services related to workstations and PCs is very attractive—both now and in the future.

But what if this market, currently dominated by platforms using Intel's family of processors and Microsoft's operating systems, has a new

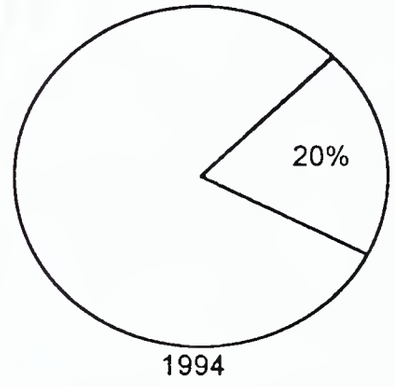
Exhibit 2

Workstation/PC-Based Expenditures–1993 and 1998*



Total Workstation/PC expenditures = $19 billion

Total Information Services Expenditures = $136 billion



Total Workstation/PC expenditures = $47 billion

Total Information Services Expenditures = $237 billion

*As a percentage of total information services expenditures

Source: INPUT, 1993

alternative—a processor that can effectively compete with Intel's' high-performance units? Such competition will result in price/performance improvements that will make PCs with powerful CPUs the norm in the second half of the 1990s.

As a result of strong competition, technology will be pushed forward at an even faster pace, and applications that use all the available power will inevitably follow. If the companies driving these changes were unknown, such a scenario

Exhibit 3

Fastest Growing Information Services Market Subsegments 1993-1998

Rank	Market Subsegment (Market Segment)	1993-1998 CAGR (%)
1.	Network Management (Outsourcing)	24
2.	**Desktop Services (Outsourcing)**	**21**
3.	**Workstation/PC (Application SW Products)**	**20**
4.	Network Applications (Network Services)	20
5.	**Workstation/PC (Systems SW Products)**	**19**
	U.S. Information Services Industry	12

Source: INPUT, 1993

would be pure speculation—wishful thinking. They're not unknown. They're the world's largest computer company (IBM), the producer of the most popular alternative PC technology (Apple), and one of the foremost manufacturers of computer chips and telecommunications equipment (Motorola). In the other corner is Intel, and in a traditional relationship, though not an inevitable one, Microsoft.

In this competitive environment, PC users, along with software and hardware vendors, will be the winners. The PowerPC offers a new market for applications. Many products will migrate, but many others will be written or rewritten to take full advantage of the growing capabilities of both the PowerPC and Pentium technologies. More power means more sophisticated applications. Multimedia becomes the norm rather than the exception, and its performance can be driven to new heights with greater power. PC power and the electronic superhighway combine to expand both home entertainment and home applications options. Client/server applications routinely expect 66 MHz performance or better, and the possibilities for workstation applications seem endless–going far beyond just CAD/CAM.

Speculation? No, prophesy. These new families of processors offer the same growth potential to 286-486 technology, that those processors offered to the old XT/AT (original PC) users. Information services vendors to the workstation/PC marketplace will find opportunities for multiple product/platform channels and a growing population of high-performance users hungry for applications to meet their needs.

Exhibit 4 presents an intriguing hypothesis: If the dynamics of a new and powerful technology alternative, coupled with active competition for the workstation/PC processor market, driven by giants in the industry, generating lower prices for faster performance, results in only a 5% to 10% growth in 1998, beyond what INPUT has forecast for those segments of the information services market related to workstations/PCs, the *new* revenue potential for vendors would be from $2 to $5 billion!

Exhibit 4

Possible Impact of Competition on the Workstation/PC-based Information Services Market in 1998

Currently Forecast Market Size ($B)	Possible Increase (%)	Potential Market Size ($B)
47	5	49
47	10	52

Source: INPUT

An increase of $2 to $5 billion in new product or service sales to workstation/PC-based purchasers of systems software, applications software and outsourced desktop services! And that's only for a 5% to 10% growth. What about 15% to 20%?

One thing is certain, this market will continue to grow at a rapid pace and the functional and price benefits resulting from strong competition can only benefit both users and vendors of information services. At worst, workstation/PC segments of the information services market will continue their aggressive growth rates. At best, they'll get dramatically better.

Recommendations

In response to the introduction of the PowerPC family of processors, INPUT offers the following recommendations to its clients:

Users: Be patient. Evaluate the PowerPC as you would any high-end workstation and make certain that its performance, in the mode in which you will use it (native or emulation), meets your needs. In the near-term (one to two years) consider the limited availability of software and the impact of multiple platform architectures on your workstation/PC environment. For the long term, expect to see lower prices for all high-end processors and increased availability of software for PowerPC systems. Anticipate you will have increased access to workstations and PCs with improved price/performance attributes, and consider applications requiring heavy processing power as viable alternatives almost anywhere in your organization. At this point in time, it appears that scalable applications may be easier to implement in a PowerPC environment, given its RISC architecture.

Vendors: The PowerPC technology both validates the current high-end market for processors and is a portent of things to come—Power to the people! Given Apple's commitment to the PowerPC platform, vendors supporting Apple systems must plan to support that operating environment. Vendors supporting Microsoft operating environments (DOS, Windows, Windows NT) must consider the potential, in their markets, for the new PowerPC platform. A wait and see approach may allow some of the market uncertainties to be resolved, but it can also lead to a late start in providing PowerPC-based (or compatible) products, and a potential reduction in market share. IBM and Apple are jointly predicting in three to five years they will have 30% of the PC CPU market. Even if they're optimistic, IBM's clout in the PC market will insure a market for PowerPC products. Vendors should consider this an opportunity to expand their product line, rather than a threat to existing DOS/Windows-based products. Vendors should also consider the potential for CPU-intensive applications in their product portfolio, because CPU cycles

will rapidly become cheaper and users will begin to require applications and performance they wouldn't have considered in the past because of price/performance limitations.

The workstation/PC market continues to grow and expand, and as in most markets, good, solid competition benefits everyone. Welcome to the information services industry, PowerPC.

This Research Bulletin is issued as part of INPUT's U.S. Information Services Market Analysis Program. If you have questions or comments on this bulletin, please call your local INPUT organization or Robert L. Goodwin at INPUT, 1881 Landings Drive, Mountain View, CA 94043-0848, (415) 961-3300.

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A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. V, No. 6 March 1994

Novell Acquisitions Demonstrate Microsoft Dominance

The two acquisitions made last week by Novell—WordPerfect and Borland's QuattroPro—were newsworthy because of their scale, and because of Novell's willingness to pay premium prices to enter new application areas. But most of all, the acquisitions underscored the inescapable market reality that drove Novell to pay those prices—the strategic dominance of the desktop software world by Microsoft.

Without that factor, Novell might have been comfortable simply maintaining its very strong position in network operating systems, an area which even Microsoft admits Novell currently owns. But the profit margins are shrinking there, as in all other segments of the desktop software world. A strategy that simply milks a current customer base, and doesn't plan for product and market expansion, will ultimately fail. Sitting with a commanding market share and a strong product, Novell still could not be comfortable that it had a defensible long-term position against Microsoft's very aggressive approach to the desktop software user.

Novell's Acquisition Strategy

Looking at the acquisitions from the outside, INPUT sees the Novell strategy as follows:

- Acquire and deliver its own suite of office applications, in direct competition with Microsoft and Lotus.

  Reduce its dependence on a single product, (despite its current strength, Netware's profit margins are believed to be declining). Novell is under intense pressure at the low end from Microsoft's Windows for Workgroups, and from simpler networking solutions from competitors like Artisoft and Farallon.

- Gain economies of scale, as well as respect and visibility in the market, by becoming the second largest independent software products provider. Novell now will be a $1.9 billion player, competing with Computer Assiciates for the number two slot among independent software vendors, behind Microsoft's $3.4 billion in 1993 revenues. (For perspective, it's worth noting that nonindependent IBM recorded $10.9 billion in 1993 revenues).

- Strengthen Borland in its battle with Microsoft in the programming languages and database arenas. This financial assistance comes at the right time for Borland, now on the defensive against Microsoft's effective product bundling and continuing enhancements. The overdue delivery of dBase for Windows is now reportedly scheduled for this summer. This is rumored to be a hot product.

- Establish a stronger position in UNIX desktop markets by offering a core application suite, sitting on UnixWare.

This strategy offers both risks and potential rewards to Novell, and opens opportunities to others as well. INPUT's view on potential winners and losers in the aftermath of these deals follows.

Possible Winners

- **Lotus**—having started the bidding war for WordPerfect, Lotus adroitly sidestepped a $1.4 billion purchase price, and left Novell to handle that very rich payoff. Since Lotus Smart Suite has been selling well in the last six months, Lotus is currently insulated from an urgent need for a WordPerfect equivalent.

- **WordPerfect founders**—Brian Bastian and Alan Ashton, will each receive Novell stock valued at $600 million dollars! This may be regarded, nostalgically, as one of the last great entrepreneurial payoffs in the software business, which is becoming increasingly dominated by commodity pricing, low margins and big conglomerates. The days of the garage start-up that could aspire to a multi-million-dollar payoff are not necessarily over (there's always multimedia, objects and the information superhighway!), but software no longer looks like a modern-day Horatio Alger's easiest path to riches.

- **Borland**—gets a badly needed influx of cash, to continue its uphill fight against Microsoft, with greater attention to enhancing its client/server databases.

- **Microsoft**—itself may be a winner, if Novell's new products and employees cause dilution of management effort, or cannot be efficiently integrated into Novell.

Companies at Risk

- **Novell** may have overextended itself financially. The 59 million shares of Novell stock pledged to WordPerfect's owners have a current street value of $1.15 billion. That's a multiple of 1.77 times WordPerfect's 1993 revenues.

Similarly, the $145 million cash paid to Borland for the ownership of QuattroPro, which produced about $75 million in 1993 revenues, seems to be a stretch. Clearly, Novell is counting mightily on the appeal of an integrated desktop software suite.

- Novell also runs additional risks of management dilution and integrating two very different companies; but at least these are closely located, which might make the assimilation easier than most.

- Novell will need to allocate substantial resources to applications software development, especially if they are to move effectively toward UNIX and client/server platforms, which leverage Unixware. And they must do this while simultaneously improving customer support, and finding ways to increase revenues from consulting and other customer services.

- **Santa Cruz Operations**, the current leader in UNIX desktop software systems, currently lacks a UNIX "killer application" or application suite of its own. To the extent that Novell joins Microsoft and Lotus in successfully offering these suites, SCO stands to lose market opportunities.

Can Microsoft Lose?

Its hard to see how. The software giant has positioned itself well in both the systems and applications software sides of the market, and is damaging other less sturdy companies with aggressive pricing, product bundling and channel domination. In the face of this stiff competition, the Novell acquisitions are a bold gamble, for which the management team deserves credit. It is likely to be Novell's best, perhaps last, chance to emerge from Microsoft's shadow, and retain firm control of its own destiny.

Microsoft Strategies

In reaching its current pinnacle atop the software industry, Microsoft has executed its strategies skillfully, even ruthlessly. In looking at current Microsoft directions, INPUT summarizes their initiatives as follows:

- A move into enterprise-wide networked desktop systems, using Windows NT to hold current Windows clients in place against Netware and IBM's OS 2, and then rolling out their enhanced server networking system, Cairo, in 1995, complete with object-oriented development tools.

  Consolidation of their strong position on standalone desktop systems, with the delivery of the "Chicago" enhancement to Windows.

- Aggressive pricing of bundled applications software suites (i.e., Microsoft Office, including Word, Excel, Power Point), placing great pressure on producers of competing standalone products.

- Bundling of applications suites with Windows NT and Access database, again producing a price benefit that pure providers of either applications or systems software cannot match.

- Active research and development into multimedia tools and applications, object-oriented programming tools and the information superhighway applications and delivery systems (witness Bill Gates' 30% ownership in Teledesic as a case in point). These will be among the hottest growth areas in information technology during the remainder of this decade, and Microsoft should be well-positioned in each of them.

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. V, No. 7 April 1994

EDS Shows 14% Earnings Growth, Lands Major New Contracts

EDS conducted its annual Analysts' Briefing at its Plano, TX, headquarters March 15-16 of this year. Highlights included the announcement of 14% growth in net income, slow but steady growth (4.2%) in revenues to $8.56 billion, the closing of major new European contracts in 1993 and an aggressive expansion of its management consulting practice.

In a typically upbeat and professional manner, EDS articulated its positions in a number of market and industry sectors. INPUT analysts in attendance were treated to a special view of EDS' worldwide Information Management Center, which probably exceeds NASA and rivals the Star Wars trilogy for sheer technical dazzle. It is likely that more than one grizzled CIO has been won over by the image and scope of competence exhibited here.

Financial highlights of the presentation are shown in Exhibit 1:

Exhibit 1

EDS Financial Highlights

- 14% growth in net profits
- 14% growth in earnings per share
- 22% return on equity
- Revenues of $8.56 billion
- 39% of revenues from GM (down from 41% in 1992)
- $29 billion in base business backlog

Source: INPUT

The $3.3 billion in GM-related revenues appears to have reached a plateau at that level. It is likely that this is a nicely profitable arrangement for EDS, although they will not comment on GM margins.

The GM contract will evidently run for as long as another 10 years if both parties remain comfortable, providing EDS with a good annuity and a continuing opportunity to hone its skills in delivering leading edge manufacturing applications to its parent.

Major European Business Helps Sales Backlog

EDS was quite successful in booking major European outsourcing contracts in 1993, led by the largest ever in Europe, the $1.5 billion deal with the U.K. Inland Revenue (their IRS), over a 10-year period.

Also significant were the $1 billion contract with Kooperativa Forbundet and $400 million with Nielsen Marketing research. In fact, 54% of new 1993 bookings came from Europe.

The most intriguing new project may be the arrangement with SpectraVision to deliver on-demand video movies to more than 700,000 hotel rooms around the world. (More than 100,000 rooms are already on-line.) At a time when nearly everyone is talking in vague generalities about the future promise of the information superhighway, EDS and SpectraVision are actually implementing something!

Major contracts secured by EDS in 1993 are shown in Exhibit 2 below:

Exhibit 2

Contract	Term in Months
Inland Revenue	120
Kooperativa Forbundet	120
Kloeckner Werke	120
Nielsen Marketing Research	120
Spectra Vision	120
The Southland Corporation	120
NASA Earth Science Data	120
Desktop IV	36
Total Contracts: $7.0 billion	

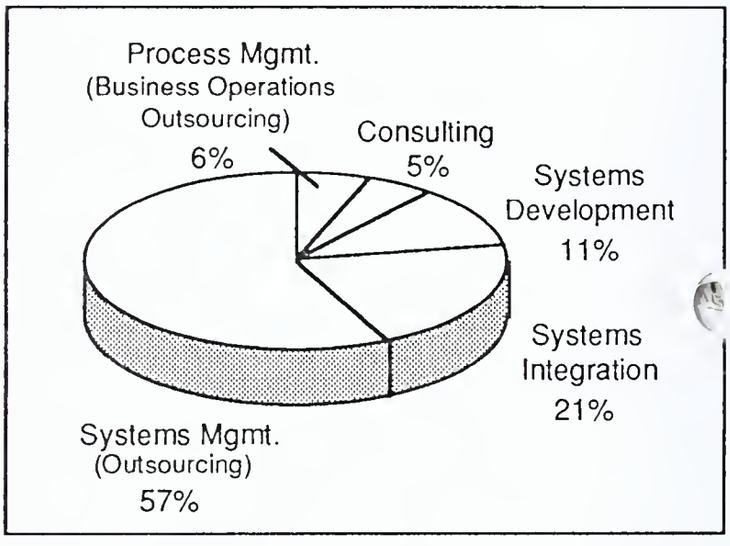
Source: INPUT

Outsourcing Revenues Still Predominant

EDS began as an outsourcing company and still generates most of its revenue from that service. But systems integration is becoming a larger factor, and EDS is focusing on the new growth areas of consulting and process management, as shown in Exhibit 3.

Exhibit 3

1993 EDS Global Service Distribution



Source: INPUT

And Then Came Xerox ...

The timing was ironic; only three business days after the highly publicized Analysts' Briefing, Xerox and EDS announced what is arguably the largest outsourcing contract ever awarded, around $3 billion over an 8- to 10-year time frame. By winning this major battle over CSC and IBM-ISSC, EDS reinforced its claim to market leadership in the outsourcing sector.

Rumors later circulated that IBM had chosen not to compete at the unattractive margins they felt would be required to win the Xerox award. This probably is a reflection of Lou Gerstner's determination to raise profit margins at IBM. Since IBM reported 1993 *gross* margins of 14% in the services sector, it seems that EDS did have more maneuvering room in price-sensitive bidding.

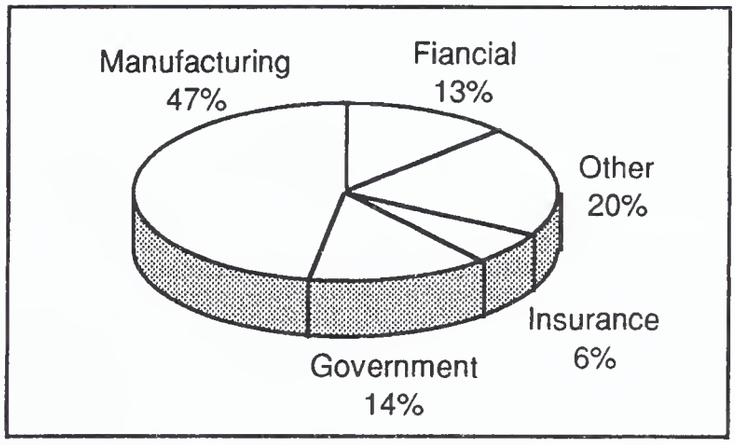
Focus on Vertical Markets

Throughout the briefing, EDS stressed its focus on several key vertical markets. Indeed, the current EDS organizational structure contains 38 Strategic Business Units (SBUs), most of them targeted at specific vertical industries. Exhibit 3 identifies revenue distribution across EDS' major markets. While international revenues are not broken out in this graph, they did account for 23% of 1993 revenues. This is a smaller overseas percentage than rivals IBM and Andersen Consulting posted; but the big European wins in 1993 show that EDS is gaining momentum in the international arena.

The 47% shown for the manufacturing market does include GM. When the GM contribution is removed, EDS' "non-captive" manufacturing sector revenues are about $700 million worldwide.

Exhibit 4

Revenue by Market Sector on a Global Basis



Source: INPUT

Co-sourcing: An EDS Strategy

Throughout the briefing, EDS speakers alluded frequently to the advantage they can gain through their willingness to "co-source" with their clients. That is, EDS is willing to share the risks of the venture, taking at least some of their profit downstream, when and if agreed-upon tangible benefits are realized by the client.

EDS is probably correct in stating that they are a leader in this type of risk-taking. (Andersen Consulting has recently begun to offer the same type of contract, on a selected basis). But it is too early to assess the financial success of this strategy.

It is not clear how many contracts written by EDS or anybody else actually contain these clauses. This is partially due to an inability of customers and EDS to agree on metrics to be used in measuring success. It is also too early to have many measurable results in projects where co-sourcing is underway.

But EDS will have, at least temporarily, a perceived market advantage as they

aggressively offer co-sourcing as a corporate strategy.

Consulting Build-Up Gathers Momentum

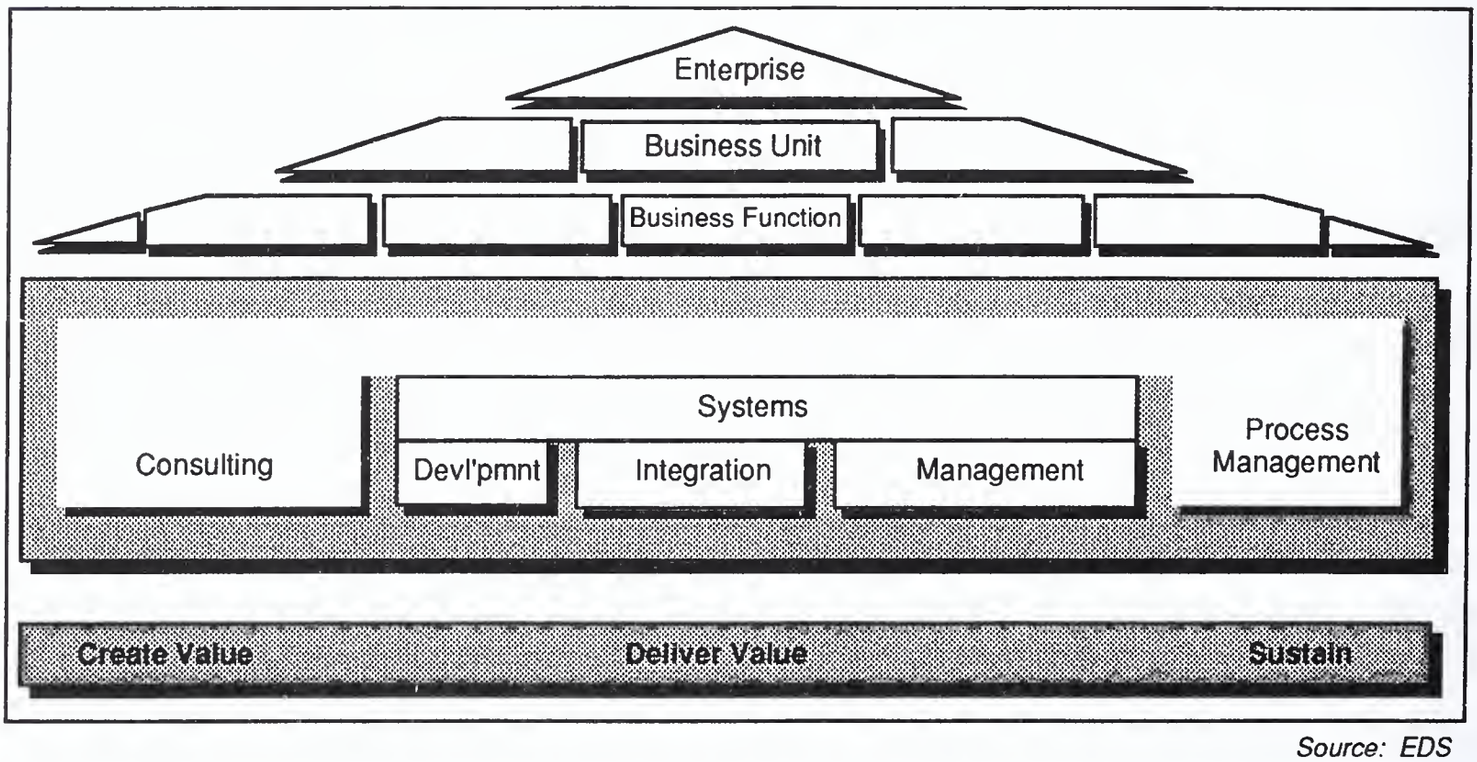
Mike Gleason, the new corporate VP of EDS Management Consulting Services (MCS), was recruited away from Coopers & Lybrand to expand the EDS presence in this area. Gleason started out at top speed, recruiting whole teams of skilled consultants in various vertical markets.

Just this week, EDS announced the acquisition of Eurosept, a $24 million French consulting firm along with F.C. Consultoria of Brazil. While the two organizations are small by EDS standards, these and other consulting firms like them are positioned to deliver and leverage value at the high end of the services continuum, as shown in Exhibit 5 below.

Gleason's remarks at the briefing focused on the renewed growth indicators now being seen in the U.S. economy. EDS wants to develop growth strategies with its clients, referring to their staff as growth engineers. In terms of the pull-through available from consulting activity, Gleason affirmed the industry rule of thumb that $1 of consulting revenues ought to generate $10 in more traditional systems integration and outsourcing activities.

Exhibit 5

The EDS Business Services Continuum



Source: EDS

EDS Strengths and Weaknesses

An analyst's view of EDS' current strengths and weaknesses, based on the recent briefing and continuous tracking of EDS for several years, is presented below. On balance, it is a positive picture. EDS has grown into the number two position (based on annual revenues) in the worldwide information services industry, behind only IBM. While EDS is not likely to challenge IBM's $20.7 billion in the near future, neither is anyone else likely to threaten EDS for the second spot

EDS has built a major, leading position in the outsourcing industry and is now moving into complementary activities in systems integration and consulting.

It is a wise strategy, one which EDS seems well-equipped to implement, considering its access to a large pool of talent, significant technical expertise and infrastructure in conjunction with a strong financial position.

Exhibit 6 sums up EDS strengths and weaknesses.

Exhibit 6

EDS Strengths and Weaknesses

Strengths
• Financial resources
• Outsourcing market presence and reputation
• Technology/networking capabilities
• Systems operations expertise
• Co-sourcing initiatives
• Industry focus, organization and expertise pool
• Consumer sector, multimedia and information superhighway positioning
• Growing SI/consulting presence
Weaknesses
• Limits on reputation: known as outsourcing/systems operations firm
• Perceived lack of organizational flexibility
• New entrant into consulting world
• Building on small international base

Source: INPUT

This Research Bulletin is issued as part of INPUT's Information Services Market Analysis Program—U.S. If you have questions or comments on this bulletin, please call your local INPUT organization or Robert L. Goodwin at INPUT, 1881 Landings Drive, Mountain View, CA 94043-0848, (415) 961-3300.

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  - Awards (FAIT)
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CUSTOM PROJECTS

For Vendors—analyze:

- **Market strategies and tactics**
- **Product/service opportunities**
- **Customer satisfaction levels**
- **Competitive positioning**
- **Acquisition targets**

For Buyers—evaluate:

- **Specific vendor capabilities**
- **Outsourcing options**
- **Systems plans**
- **Peer position**

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. V, No. 8 April 1994

Top 30 Information Services Vendors Ranked

During the last three months, INPUT conducted its annual surveys of leading information services vendors, to determine 1993 industry revenues and revenue growth rates. This survey activity in Europe, Asia and North America is crucial in building INPUT's five-year forecasts for each region.

As an ancillary benefit of these surveys, INPUT is able to create rankings of information services vendors, based on their revenues and geographic areas along with the industry sectors and product/services markets they serve. Our research bulletins and market reports will publish several variations of these rankings, with appropriate analyses. As an introduction, this bulletin lists the 30 largest information services vendors, based on their worldwide 1993 fiscal year revenues. There are several caveats to consider when examining these figures:

- Revenues include the eight product/service categories regularly included in INPUT forecasts:
  - Professional services
  - Systems integration
  - Outsourcing
  - Processing services
  - Network services
  - Systems software products
  - Applications software products
  - Turnkey systems
- The rankings do not include revenues from shipments of equipment outside the systems integration or turnkey systems channels, or from equipment maintenance services. For more specific discussion of the components in each of these categories, see INPUT's current *Definition of Terms* Book, published in April 1993.

- Unlike the detailed MAP Forecast Reports, revenues listed are for the most recent fiscal year, instead of calendar year. Several leading vendors, such as Microsoft, Digital Equipment, CSC and Oracle use fiscal years that do not coincide with calendar years.

- "Captive" revenues have been excluded. This is pertinent in the case of IBM, where $1.2 billion of internal cost transfers was removed, and for EDS, where $3.3 billion was removed to reflect EDS business with parent General Motors.

- Revenues from operations and 1993 acquisitions are included.

The following table is not utilized as a driver for INPUT's statistical modeling and forecasting activity, since the necessary precision is not available. Rather, it is offered as a high-level estimate of revenues and relative positioning which INPUT believes will be of interest to its clients. The 30 largest worldwide vendors are shown in Exhibit 1.

The top 30 grew at a 13% rate during 1993, compared to 6% for the worldwide market. Acquisitions, of course, played a part in this growth. The bigger companies can be expected to grow even more rapidly as they acquire smaller firms to complement their own internal growth. Prior INPUT studies have often shown that when *only* internal growth is considered, smaller and midrange firms have often outperformed the giants in percentage growth.

In ranking the top 30 in terms of revenue growth rates, Microsoft stands well above the crowd at 36%. Oracle, Hewlett-Packard, First Data, WordPerfect and Unisys all achieved growth in the mid-20s range. Only two vendors showed negative growth.

An interesting fact is the strong growth reported by three Japanese vendors, NTT Data Communications Systems Corp., NEC and Hitachi. In a year when the Japanese information services market actually declined in value (see the just-published INPUT Worldwide Forecast report, 1994-1999), these three major players gained market share at the expense of many smaller firms.

U.S. Vendors Dominate the List

Twenty-three of the top 30 firms are headquartered in the U.S., four in Japan, and one each in France, Germany and the United Kingdom. This concentration is to be expected, since the U.S. essentially created the information services industry, and the world's dominant market (47% of the total revenue) has developed here.

Another important factor is that many U.S. firms have been successful in exporting their services to overseas markets. With few exceptions, the European and Japanese vendors have had a much more difficult time in generating strong market positions outside their own country. Whether it is reality or perception, many overseas buyers are quite willing to assume that American services and software products

Exhibit 1

INPUT Top 30 Worldwide Information Services Vendors

Vendor	1993 Rank	1993 Revenues ($M)	1992 Revenues ($M)	Annual Percentage Growth
IBM Corporation	1	19,450	17,250	13
EDS	2	5,184	4,870	6
NTT Data Comm. Sys	3	3,827	3,119	23
Microsoft	4	3,753	2,758	36
Fujitsu	5	3,273	3,120	5
Digital Equipment	6	3,225	2,850	13
Andersen Consulting	7	2,876	2,723	6
Unisys	8	2,738	2,260	21
Reuters	9	2,619	2,195	19
CSC	10	2,502	2,474	1
ADP	11	2,327	2,066	13
NEC	12	2,273	1,834	24
Dun & Bradstreet	13	2,160	2,232	-3
Computer Associates	14	2,050	1,770	16
Siemens Nixdorf	15	2,050	1,920	7
TRW	16	1,980	1,855	7
Cap Gemini	17	1,865	2,003	-7
Hitachi	18	1,863	1,592	17
First Financial Mgmnt	19	1,586	1,354	17
Hewlett-Packard	20	1,532	1,235	24
Oracle	21	1,503	1,178	28
First Data Corp.	22	1,490	1,205	24
ATT/NCR	23	1,440	1,370	5
Novell	24	1,034	850	22
Lotus	25	981	900	9
Ceridian	26	882	830	6
Dow Jones	27	861	809	6
Equifax	28	803	748	7
Price Waterhouse	29	725	630	15
WordPerfect	30	705	575	23
Top 30 vendor revenues		**78,852**	**70,000**	**13**

are more likely to offer—over those of other exporting nations—high value, functionality and reliability. This has served U.S. providers well in their move into global markets. A number of prominent U.S.-based companies on this list now report more than 50% of their information services revenues coming from non-U.S. channels. IBM, Digital Equipment, Microsoft, Oracle and Novell fall in this category.

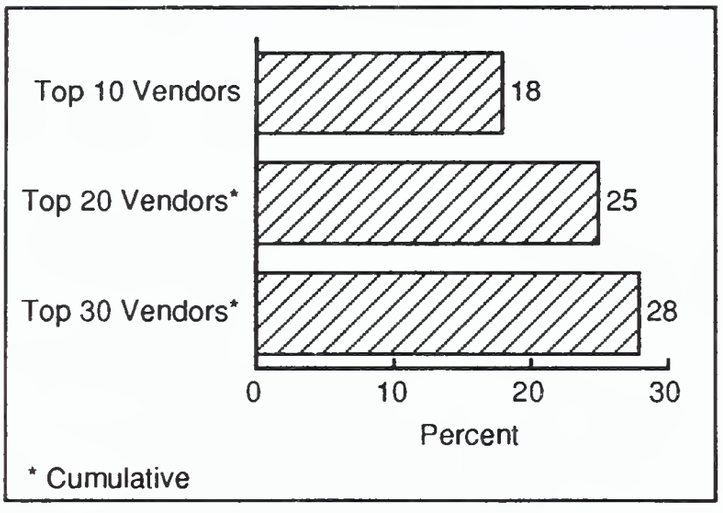
Global Concentration Not a Factor

The "80-20" rule often applies in a number of nontechnology markets. That is, 80% of the revenues are generated by 20% of the providers. That is clearly not

the case for information services, either worldwide or in the U.S, as shown in Exhibit 2.

Exhibit 2

Worldwide Market Share of Leading Information Services Vendors



Source: INPUT

While smaller market segments and specific countries will exhibit greater concentrations, the overall view is a fragmented one. The largest vendor, IBM, holds a 7% worldwide market share. EDS has a 2% share, and no other vendor controls more than 1%.

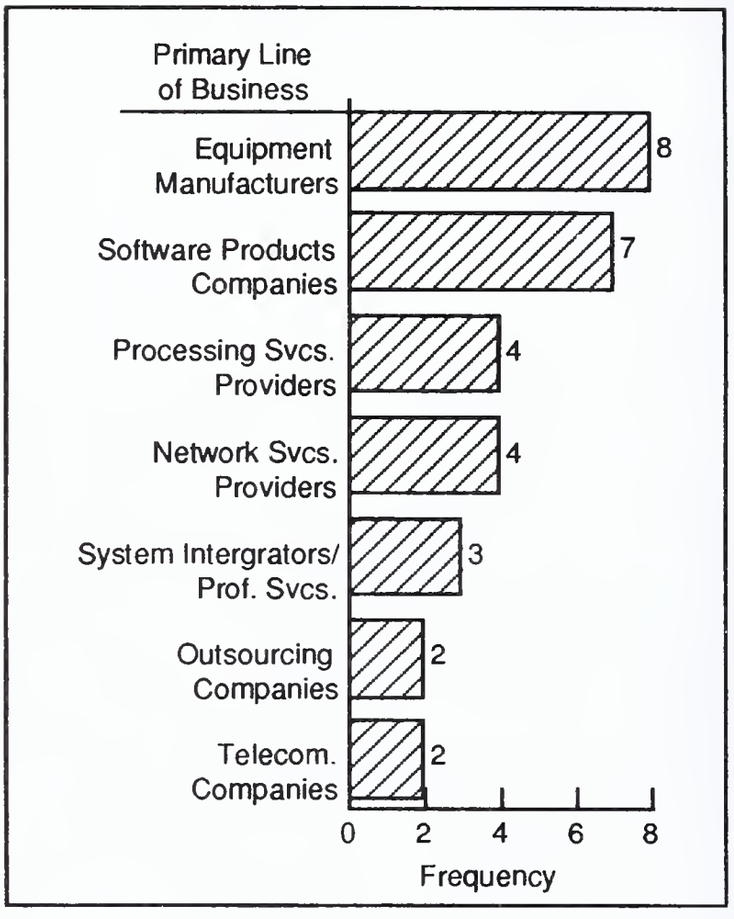
Equipment and Software Vendors Have Greatest Representation

When the top 30 list is segmented by vendors' primary line of business, equipment and software products, manufacturers are most prominent, as shown in Exhibit 3.

The equipment manufacturers have grown their software numbers rapidly because so much embedded systems

Exhibit 3

Top 30 Vendors—Primary Business



Source: INPUT

software is shipped with their hardware, or is sold separately in conjunction with machine upgrades. However, most of the leading manufacturers have moved aggressively into the services arena as well—IBM, Digital and Unisys are notable in this regard. The listed software firms have all taken strong positions in the desktop and client/server markets, although two of them, Computer Associates and Dun and Bradstreet Software, began by supplying software products for mainframes some years ago.

The processing services firms have been built on thoroughly refined transaction-

oriented specialties, ADP, First Data Corporation and First Financial Management have each developed formidable expertise in their own focused markets.

The same may be said of network services companies. Reuters and Dow Jones are well known for their financial information services, and TRW and Equifax for credit reporting databases.

EDS and CSC ranked one and two in market share in INPUT's 1993 Outsourcing reports, though both have moved aggressively into other areas as well. Telecommunications giants ATT and NTT(Japan) both have much larger business bases in the telecommunications sector, but have made established significant presence in the information services world as well.

Are These Rankings Secure?

At the very top, it may be a long time before IBM can be overtaken. However, below that level, volatility is expected. Acquisitions will propel new names into the top ranks. For example, through its acquisition of WordPerfect in early 1994, Novell should move up to at least the 18th position this year. New opportunities, and vendor skill in exploiting them should keep this list a dynamic one. In any event, we will revisit the top 30 list at this time next year. It might also be interesting and perhaps alarming, to look back a few years and see how the list of leading players has changed since the 1980s.

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- **Peer position**

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. V, No. 9 May 1994

Worldwide Market Forecast Shows Slow Growth in 1993, Renewed Optimism for 1994-98

Forecast Overview

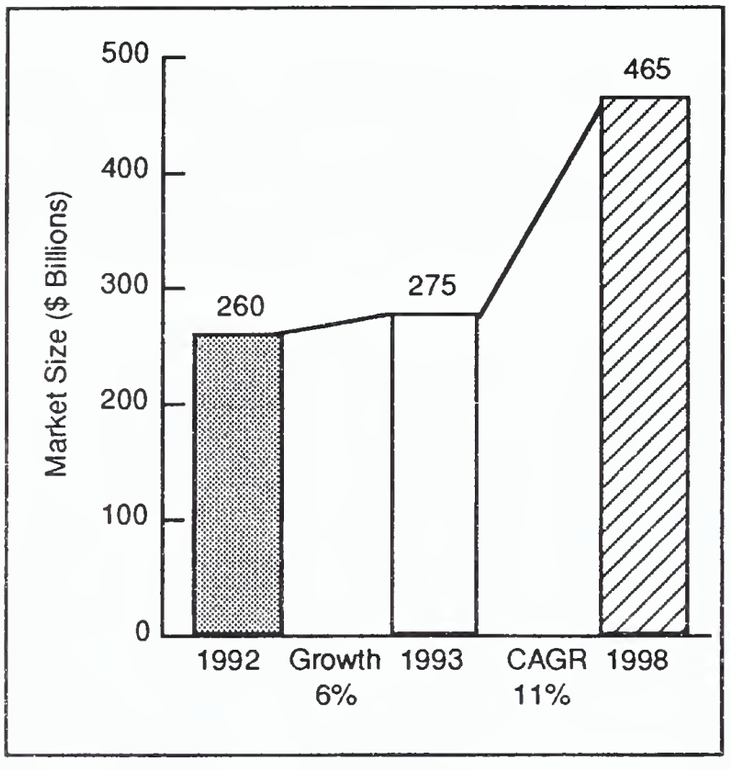
The 1994 Worldwide Information Services Forecast has just been released by INPUT, and discloses mixed results for the information services industry in 1993. INPUT assessed the worldwide information services growth to be 6% during 1993, the lowest rate recorded during the five years of INPUT's producing this unique study of the global industry.

Growth in Europe slowed to 5%, while Asia actually experienced -3% growth, attributable to Japan's negative 6% result. The 1993 growth in specific product/service markets was consistently lower than in years past. Professional services grew at only 2%, reflecting price pressures and reduced contract activity—driven by economic and budgetary constraints. Systems integration projects also suffered, with a 9% growth rate, influenced by the same economic factors.

On the positive side, a handful of nations did achieve healthy growth during 1993, primarily in Asia and Latin America. The markets for applications software products, network services and outsourcing registered double-digit growth. The most optimistic finding involves the extended five-year market forecasts. INPUT sees a rejuvenation in the worldwide market, with 9% growth occurring this year and climbing to 10-12% during the 1995-1998 period. Driving this accelerated growth will be: client/server computing, enterprise-wide networking, the demand for globalized IT solutions, desktop services and network management outsourcing, international standards development and the growing need for information as a competitive tool by many firms. The overall five-year growth rate for the 1993-1998 period is projected at 11%, as shown in Exhibit 1.

Exhibit 1

Information Services Market Forecast—Worldwide, 1993-1998



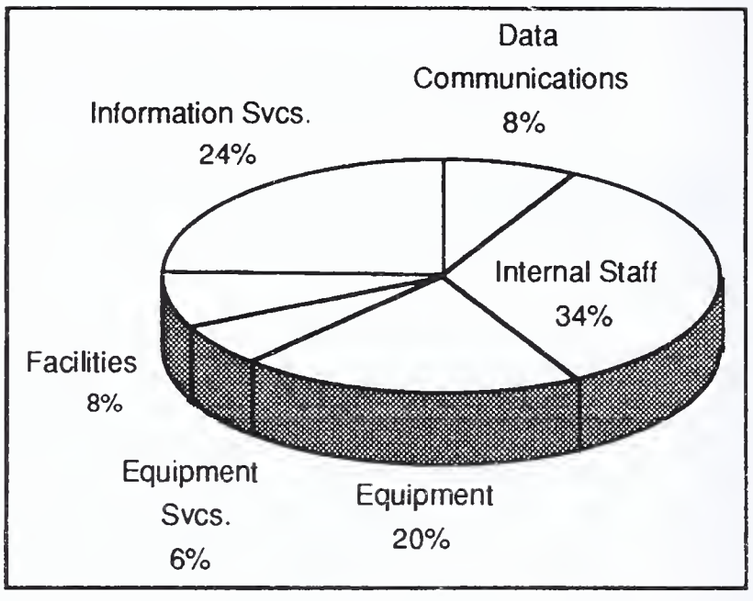
Source: INPUT

IT Spending Defined.

For the first time, INPUT has included in this report its estimates of total information technology spending in each of the 30 leading industrial countries, to accompany its traditional information services forecasts. These new major categories of expenditures include data processing equipment, equipment maintenance and services, internal staffing and data communications along with facilities and overhead. The overall worldwide distribution of IT spending is shown in Exhibit 2.

Exhibit 2

1993 IT Spending Percentages—Worldwide



Source: INPUT

Overall IT expenditures exceeded $1.3 trillion in 1993. Looking five years out, INPUT anticipates equipment and equipment services shares of IT spending will slightly decline due to continuing improvements in systems price/performance, even higher equipment reliability and continuing downsizing of major platforms. Concurrently, information services and data communications portions will increase, reflecting the industry's growing dependence on third-party software and services providers, plus pervasive networking of desktop users within and outside of most enterprises. This networking surge is affecting home computer users as well. The rapid growth of Internet users emphasizes the rising demand for networking extending into consumer-oriented applications as well.

Top Ten Country Markets

The U.S. continues to be the largest market for information services, by a wide margin. INPUT's 1993 estimates of the 10 largest information services national markets are shown in Exhibit 3.

Exhibit 3

Largest Information Services Country Markets

Country	1993 Revenues ($ Billions)	1993-1998 CAGR (%)
United States	136	12
Japan	39	9
France	20	7
Germany	17	12
United Kingdom	12	10
Italy	8	8
Canada	5	11
Netherlands	5	10
Sweden	4	8
Switzerland	3	10

Source: INPUT

These 10 countries in reality *are* the market today, amounting to 89% of the industry total. The United States, which comprises 49% of the total market, obviously has considerable effect on the worldwide numbers. The 12% growth rate projected for the U.S will result in increased information services revenues of at least $15 billion in 1994, and as much as $26 billion in 1998. Clearly, there is still plenty of opportunity for those U.S. vendors who choose to stay at home and concentrate on this crowded, competitive, mature market. But exciting opportunities exist elsewhere, especially in smaller, younger country markets where growth is faster, and competitors less established. The leading country growth markets are listed in Exhibit 4.

Exhibit 4

Leading Growth Rates, Information Services Markets

Country	1993-1998 CAGR (%)
South Korea	36
India	26
Mexico	22
Portugal	19
Argentina	17
Venezuela	16
Singapore	15
Taiwan	15
Brazil	15
Hong Kong	13

Source: INPUT

It is also interesting to note that Eastern Europe, with a consolidated CAGR of 24%, and the "other" countries of Latin America with 20% CAGR, present attractive new markets. Of course, there are risks in both regions as well, including runaway inflation, lack of convertible liquid assets, potential for unstable economic environments and the complexities of shadowy political influence and Byzantine procurement practices.

Among the "other" countries not individually treated in this report, China is especially intriguing. The sheer size of the country and its determination to modernize—especially in manufacturing and telecommunications—make it a

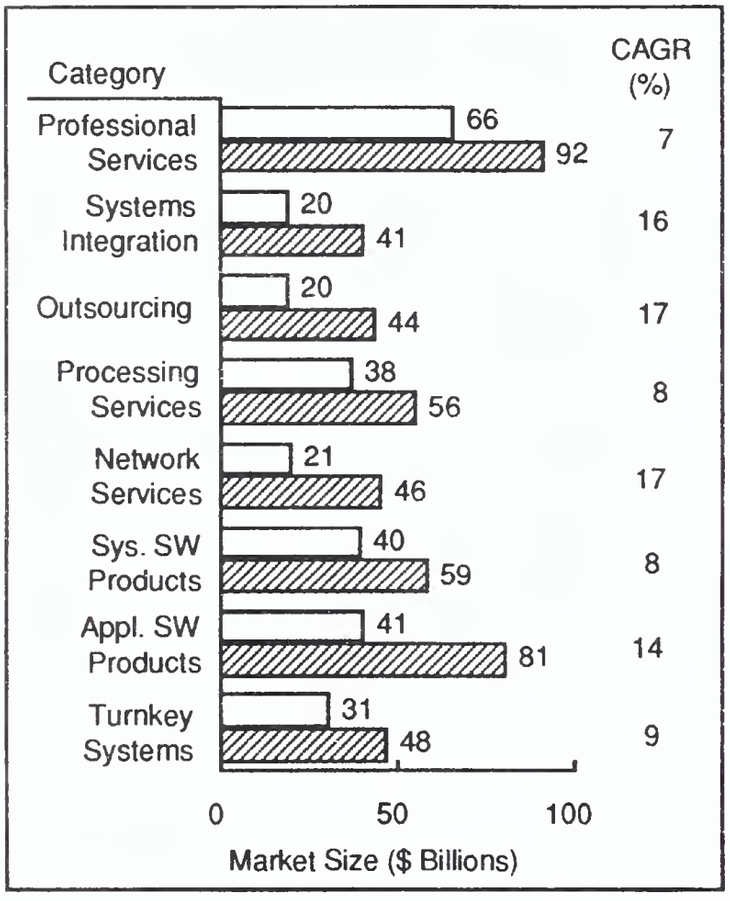
tempting potential market for many Western companies. The emerging Chinese IT environment is still very difficult to measure accurately, but INPUT will make the attempt in the 1995 Worldwide Report, if not sooner.

Outlook for Service Categories

The five-year forecast for each of the eight product/service categories tracked by INPUT are shown in Exhibit 5.

Exhibit 5

Worldwide Information Service Market Forecast by Product/Service Category, 1993-1998



Source: INPUT

Professional Services is expected to rebound from its very low 1993 growth, to a more typical, steady 7%. Systems Integration and Outsourcing will resume their status as dynamic growth leaders, as users continue to look for sophisticated outside assistance to create and operate complex systems. Applications software products will also show healthy long-term growth, as packaged software gains in capability, functionality and ease of customization.

These numbers represent global trends—the casual reader can review the report's 22-page Executive Overview for additional top-level worldwide forecasts. For services and software providers who are evaluating international expansion moves, consulting some of the 30 chapters that contain detailed forecasts on the leading industrial markets will be more instructive. The entire report is 394 pages and contains 253 exhibits—it is certainly the current, definitive study on worldwide information services.

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A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. V, No. 10 May 1994

Andersen Consulting Targets Transformational Change

Andersen Consulting conducted its annual briefing for industry analysts in late March and used the occasion not only to report 1993 financial results, but to emphasize its strong directional thrust in delivering *transformational change* to its clients. Andersen believes that the transformational approach, as differentiated from more incremental change activity, is what clients increasingly want and need to enable them to spring ahead of their competitors. A graphic display of the position Andersen wishes to occupy is shown in Exhibit 1, used in its briefing. Andersen wants to move continually toward the upper right corner of the chart, leaving more niche-oriented suppliers to deliver the incremental improvements in the lower left segment.

George Shaheen, Andersen's Managing Partner, described a number of growth strategies intended to position Andersen at the forefront of transformational change implementors:

- The company's mission and vision are geared toward delivering value to clients and help them become more successful—broadly defined to include all elements of change under management and technology consulting. Andersen's vision is "to be one global firm committed to quality by having the best people with knowledge capital, partnering with the best clients to deliver value."

- Andersen Consulting spends considerable effort ensuring that the mission and vision are well integrated at all levels and functions within the firm. Its impact is seen in a number of ways. For example, clients are viewed as partners creating joint teams with Andersen Consulting. Moreover, there is a strong emphasis on Andersen Consulting sharing implementation risk and delivering results.

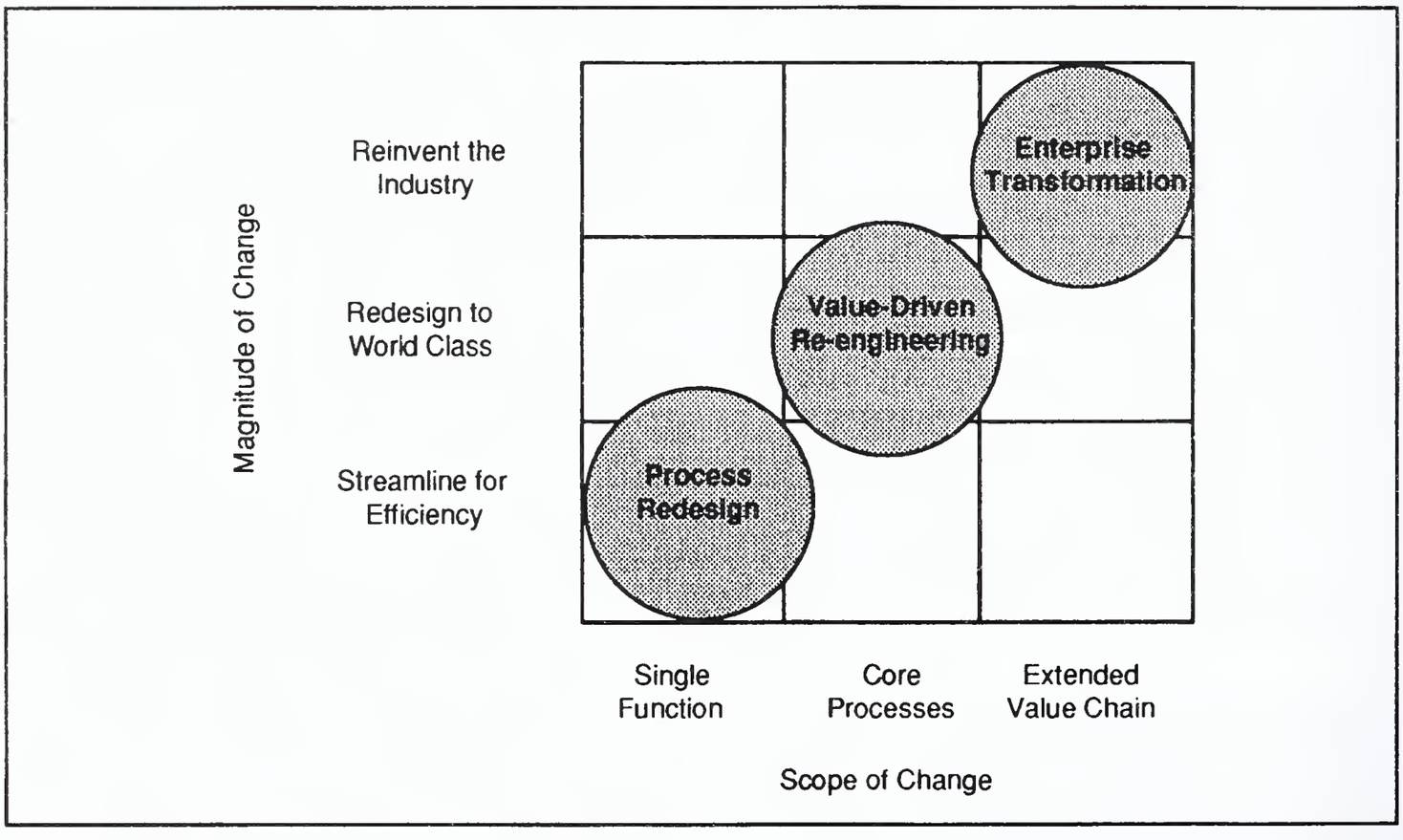
- Business integration, or linking change to strategy, people, processes, and technology, is Andersen Consulting's approach to making

change work long-term for its clients. Andersen views business integration as the logical extension of its origins as a systems builder and then a systems integrator. The organization now seeks to address all elements of change because it believes that long-term success comes from considering the organization holistically, not just integrating systems or redesigning processes.

- The Strategic Services and Change Management Services practices, which focus on the strategic and human resources needs of clients, are being expanded to make them full participants in the business integration process.
- The organization seeks to help its clients exploit the convergence of computers, communications, telecommunications and other elements of the Information Superhighway. Andersen Consulting's name for this convergence is Infocosm.
- Andersen plans to generate strong growth in Business Process Management (outsourcing), since transformational activity is viewed within Andersen Consulting as an ongoing process, not a one-time event.

Exhibit 1

Where Is the Market Headed?



Source: Andersen Consulting

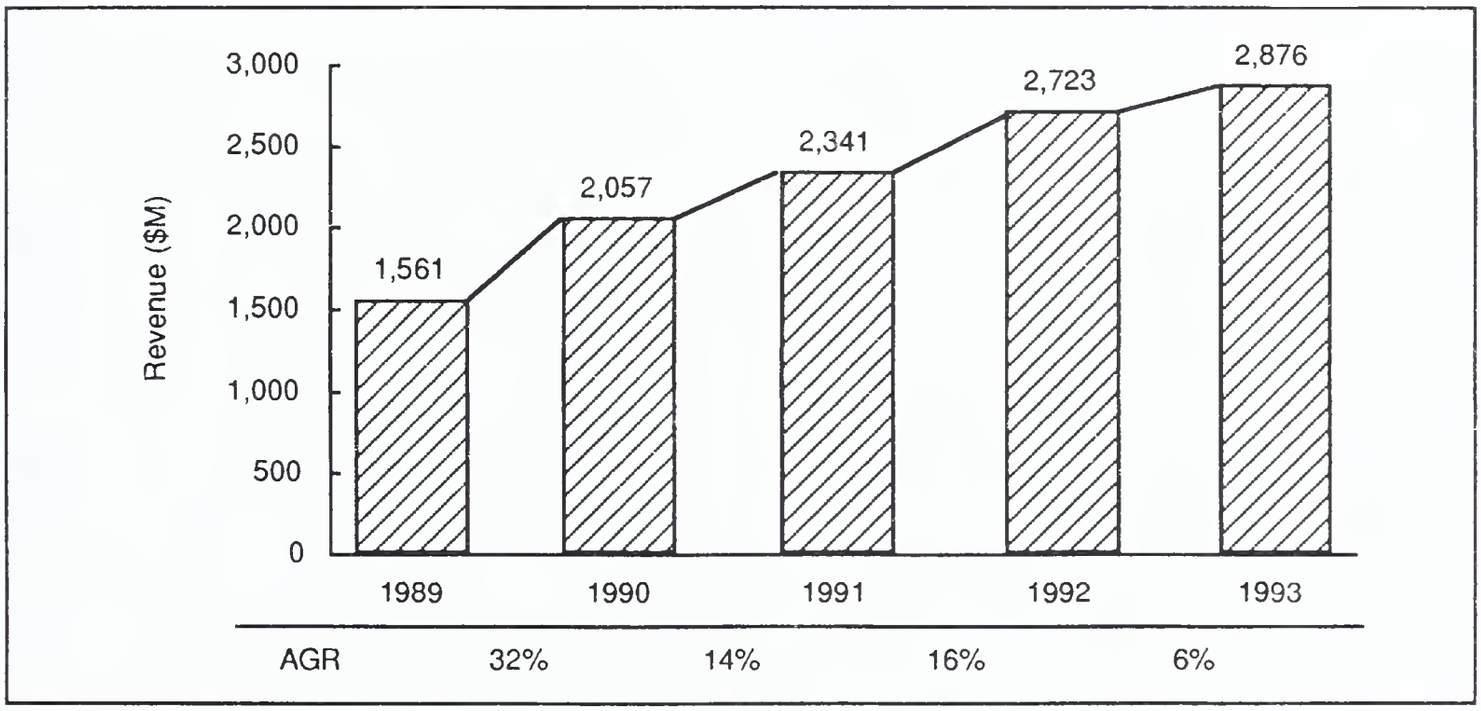
1993 Revenue Growth of 6%—Worldwide

Andersen's 1993 worldwide revenues were $2,876 million, an increase of 6 % over 1992. This is a significantly lower growth rate than that experienced in the last few years, as evidenced by Exhibit 2.

(According to Andersen, the organization's "real" growth, taking out the influence of international exchange rates, was 13% in 1993.) This revenue level will position Andersen as the world's seventh largest vendor of total information services, and the leader among independent systems integrators.

Exhibit 2

Andersen Consulting Revenues 1989-1993

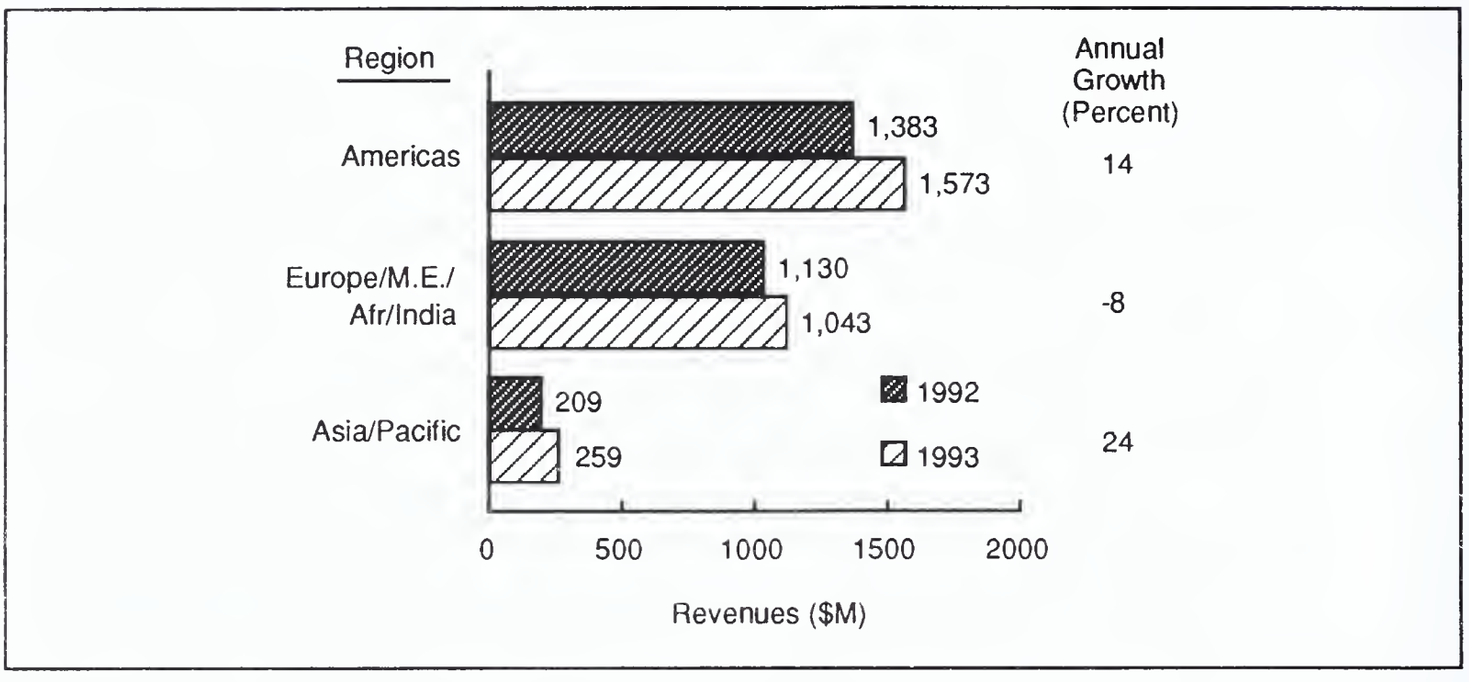


Source: Andersen Consulting

European,/Middle East/Africa/India sector growth was negative when measured in dollar terms, but would have been a plus 8% before currencies were converted into dollars. The growth rates in the Americas and Asia/Pacific regions were considerably better than that, as shown in Exhibit 3.

Exhibit 3

Andersen Consulting Revenues by Region, 1992-1993



Source: Andersen Consulting

Andersen's Americas Region revenue growth of 14% exceeds the 9% systems integration growth rate for the 1993 North American market, as measured by INPUT's just-published Worldwide Information Services Forecast. The dynamic 24% growth Andersen achieved in the Asia/Pacific Region is especially impressive, measured against the zero-growth 1993 systems integration market defined by INPUT. Andersen's competitors are especially aware of the high rate of growth Andersen has managed to achieve in a slightly shrinking Japanese market last year.

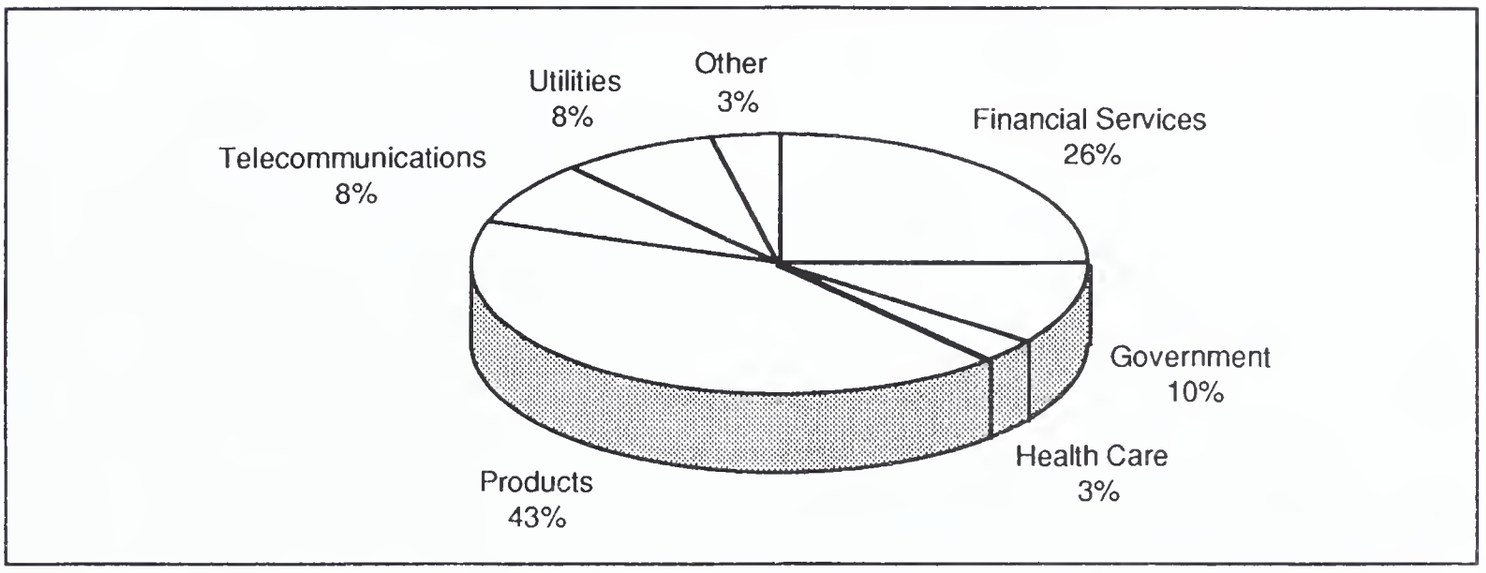
Industry Revenue Breakout

Andersen segments its business into six major industry categories, and has developed impressive bodies of knowledge in each. The degree of Andersen's industry specialization and focus is reminiscent of the IBM industry-oriented sales operation of the 1960s and 1970s. It was then that IBM achieved market dominance, in large part due to the industry credibility its staff demonstrated in client and prospect contacts. (Incidentally, IBM recently announced a plan to return to this same industry focus in its field organization.)

Andersen's revenue, spread across the indicated industry sectors, is shown in Exhibit 4.

Exhibit 4

Andersen Consulting Revenues by Industry



Source: Andersen Consulting

Within the Financial Services sector, significant new growth came from the insurance industry. Within the Products sector, both consumer products and process/energy markets showed strong growth.

Emphasis on Infocosm

Andersen believes it is well positioned to help its clients benefit from the looming convergence of computers, communications, wireless, cable, television, education and entertainment. At Andersen Consulting this phenomenon, expected to elegantly yet simply merge content and delivery systems for the consumer market in some yet to be determined form, is called, *Infocosm*. If the word has no exact context today, that is entirely appropriate, given the tremendous amount of confusion over the ultimate shape of this market, and uncertainty as to who might be the leading players. To help communications carriers clear up this confusion, Andersen sponsors the Customer Contact forum, an Infocosm conference for telecommunications executives designed to focus on the implications and opportunities arising from convergence.

Another initiative to help clients is the Infocosm Multimedia Factory™, a production environment where Andersen clients can simulate and develop architectures that will eventually deliver content-rich multimedia applications.

Client/Server Investment Pays Off

Several years ago, Andersen accurately assessed the rising tide of client/server computing, and made a conscious investment in training many thousands of its 29,200 people to be client/server literate and capable. Andersen is now reaping the rewards of that investment, achieving a recognized position as a leader in performing client/server systems projects. Only SHL Systemhouse and BSG Consulting have comparable reputations among independent service providers. Andersen's client/server systems building accounted for 23% of its

building accounted for 23% of its 1993 revenues. If related work in strategy development and change management is included, that proportion rises to 51%, up from 40% in 1992. This has clearly been one of Andersen's major growth engines over the past year.

Global Capabilities

As a global firm, Andersen is proud of its ability to react to enterprise-wide client needs. The company stresses its ability to move resources and talent across geographic boundaries with relative ease. One case in point is the mobilization of 200 professionals from 15 countries to assist in the privatization of Argentina's national oil and gas agency. Andersen claims an advantage in globalized reaction time and depth of coverage, compared to companies with more geograghically-specific organizations and charters.

Positioning of Outsourcing Direction

In the outsourcing market (business process management in Andersen's terminology), Andersen has elected not to compete head on with EDS and ISSC in the world of platform and applications operations. These two market leaders can overwhelm many competitors with raw "MIPS" capability in those areas. Instead, Andersen will focus on applications management and outsourcing of entire business functions, including the IT component, as it did in the British Petroleum Exploration contract. Client/server environments and network management will be emphasized as targets. Since these are the fastest growing segments of the outsourcing market, and IBM and EDS do not dominate either market, this is a sound strategic position.

Summary—Strengths and Weaknesses

A year ago, INPUT published a research bulletin assessing Andersen's strengths and weaknesses. After this briefing, and considering the activities of the past year, INPUT offers an updated assessment—one that is not greatly changed. The overall outlook for Andersen is still quite positive, even though it would be a mistake for complacency to set in. Based on comments by its senior partners at the briefing presentation, Andersen remains lean and hungry and is not resting on any of the laurels it has won. The firm's strengths are summarized in Exhibit 5.

Exhibit 5

Andersen Consulting: Strengths

- Credibility with customers' senior management
- Positive image in the market
- Global presence and reaction time
- Clarity of organizational focus and vision
- In-depth systems integration capabilities
- Vertical market expertise, references, organizational focus
- Depth of staff client/server skills, knowledge base

Source: INPUT

INPUT's assessment ofAndersen's weaknesses are noted in Exhibit 6.

Exhibit 6

Andersen Consulting: Weaknesses

- Aggressive move into strategic consulting could cause dilution of key resources
- Increasingly larger size could lead to lack of agility
- Lack of full range of business process management (outsourcing) capabilities
- High price versus many competitors
- Incremental change still being delivered in some cases, not transformational change

Source: INPUT

This Research Bulletin is issued as part of INPUT's Information Services Market Analysis Program—U.S. If you have questions or comments on this bulletin, please call your local INPUT organization or Robert L. Goodwin at INPUT, 1881 Landings Drive, Mountain View, CA 94043-0848, (415) 961-3300.

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- **Customer satisfaction levels**
- **Competitive positioning**
- **Acquisition targets**

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. V, No. 12 September 1994

Software Services: Major Market Opportunity for Systems Software Vendors

INPUT recently completed its annual survey of the U.S. Systems Software Market. The study divides the systems software market into three principal product divisions: Systems Control, Operations Management, and Applications Development Tools.

System Control Products are software programs that function during application program execution to manage computer systems resources and control the execution of the application program. Examples include operating systems, network control, and access control products.

Operations Management Tools are software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Examples include performance measurement, network management, job accounting, computer operating scheduling, disk-management and capacity management products.

Application Development Tools include traditional programming languages, 4GLs, data dictionaries, database systems, CASE tools and other development productivity aids.

U.S. Systems Software Markets Size and Growth Rates

INPUT estimates the size of the U.S. Systems Software Products Market in 1994 to be approximately $23.7 billion.

The Applications Development Tools market, estimated to be $10.3 billion by the end of 1994, represents the largest systems software product segment. It is also the fastest growing segment, with an estimated five-year compound annual growth rate (CAGR) of 12%.

The Systems Control Products and Operations Management Tools Markets are similar in size. However, INPUT projects that the Systems Control Products market will show little or no growth over the next five years; whereas, the Operations Management Tools market is projected to grow at a five-year CAGR of 9%.

A major component of the Systems Control Products market is operating systems. The availability of lower cost hardware platforms, with proportionately priced operating systems and increased usage of "standard" operating systems will result in little or no growth in operating systems software products.

INPUT's tracking of the U.S. systems software product market shows a decline from an annual growth rate in the mid- 1980s of approximately 25% to a projected annual growth rate in 1994 of 9%. This reflects the major increase in market size over this time period and the related factor of market maturity.

Major variances in growth rates are projected for Operations Management and Applications Development Tools, which reflects relative stages of market growth by hardware platform size.

INPUT's five-year CAGR forecast for the workstation/PC segments of these markets is 19%, compared to a range of 2%-3% for the minicomputer and mainframe sectors of these markets.

INPUT's studies show that the U.S. application software products market during the same time period has experienced a decline from approximately a 27% CAGR in the mid 1980s to an estimated 14% annual growth rate in 1994. This change also reflects the greater market size of $27.7 billion in 1994.

The decline in the growth rate of the U.S. software products markets in general can be attributed to such factors as:

1) Price declines related to the downsizing of hardware platforms

2) Aggressive pricing by software vendors to maintain their growth through market share gains

U.S. Systems Software Market Directions

Maturity has occurred in many software markets for standard solutions, particularly in most segments of the systems control software product markets.

The higher growth segments of the U.S. software market over the next five years will be software related services, such as consulting, custom application development, training, systems integration, and the outsourcing of such services. This reflects in large part the complexities of supporting client/server and other types of distributed processing solutions.

In addition, INPUT estimates that almost half of the total "available" U.S. applications software market is composed of internally developed custom or vendor-customized software.

In many foreign countries, a much higher percentage of the application software markets is taken by custom application development projects.

The software product support services segment is one of the fastest developing information services markets. This reflects a trend by software product vendors toward unbundled pricing of traditional maintenance services. These separately priced support services tend to include professional services such as consulting, training, and custom application.

The software product support services market also provides a significant "outsourcing" opportunity, particularly for the larger third party vendors who can provide cross-vendor support services.

Exhibit 1 shows that the software-related services markets on average will grow at nearly twice the rate as the systems software product markets (Exhibit 2) over the next five years. The only exception is the growth of workstation/PC-based systems software products where the continued proliferation of platforms will drive systems software product growth through the millennium.

Exhibit 1

Software-Related Services Markets

Services	1994 ($B)	1999 ($B)	CAGR (%)
Total Market	56.9	114.2	15
Professional Services	23	38	11
Software Product Services	8.4	22.8	22
Systems Integration	11.2	22.7	15
Outsourcing	14.3	30.7	17

Source: INPUT

Exhibit 2

U.S. Systems Software Products Markets

Products	1994 ($B)	1999 ($B)	CAGR (%)
Total Market	23.7	35.1	8
Mainframe	9.8	10.7	2
Minicomputer	7.3	8.5	3
Workstation/PC	6.7	15.9	19

Source: INPUT

Key Factors to Successful Penetration of the U.S. Software-Related Services Markets

A principal drawback of the software-related services markets is that operating margins are oftentimes much lower than for the software product markets. Thus, efficiencies in product delivery are key to success.

This requires sophisticated application development tool technology and the expertise to apply such tools for custom application development and support on a cost basis competitive with in-house development. Many systems software product vendors are well positioned to provide such product expertise.

An optimal "blend" for a systems software vendor is a systems software product offering that can be utilized by the company's professional services (application development) staff to provide a value-added product solution to the user. Examples of companies providing this today include: Compuware, Oracle, Computer Associates, Andersen Consulting, EDS, IBM, Hewlett-Packard, and Unisys.

Several of these companies are in the early stages of developing integrated application development platforms which address cross-vendor distributed processing and legacy processing migration which gives them a head-start on the next generation of client/server computing architectures in U.S. corporations.

INPUT examines the nature and benefits of these integrated application development environments in its *U.S. Systems Software Market, 1994-1999* report.

This Research Bulletin is issued as part of INPUT's U.S. Information Services Market Analysis Program.
If you have questions or comments on this bulletin, please call your local INPUT organization or Robert L. Goodwin at INPUT, 1881 Landings Drive, Mountain View, CA 94043-0848, (415) 961-3300.

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Research Bulletin

A Publication from INPUT's Information Services Market Analysis Programme – Europe

Vol. V, No. 7 November 1994

Information Services, Vendors Face Severe Competition in Europe's Largest Market

France is the largest European market for software, services and maintenance, but recently it has not been an easy market for French vendors. The recession and the switch in demand from custom to standard software caught some vendors unprepared or slow to respond to competitors.

INPUT expects relatively small improvements in market demand over the next five years in Europe. As a result, there is likely to be further restructuring, especially among the French vendors as they position themselves to improve profitability and meet new customer demands.

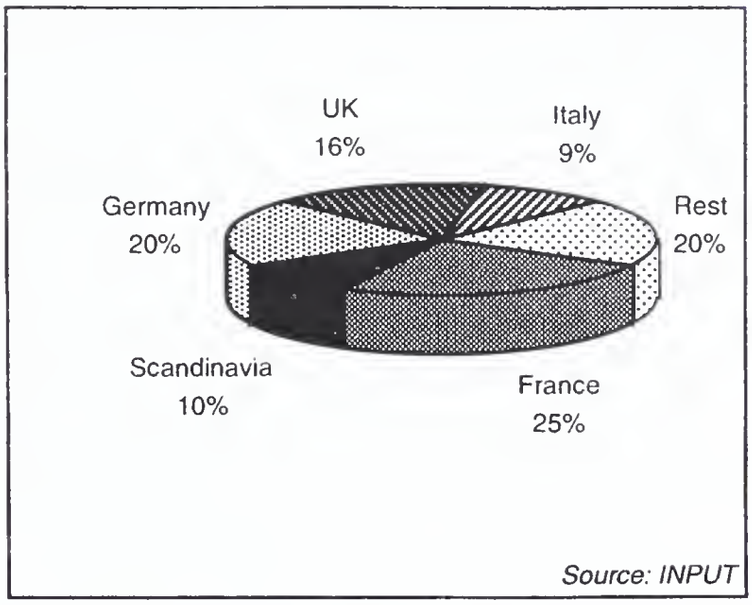
The four major countries, Germany, France, Italy and the United Kingdom, currently share 70% of the total European market for information services (see Exhibit 1), up from 69% in 1992.

The information services market is the combined total of expenditures in the INPUT-defined delivery modes listed here:

- Professional services
- Systems integration
- Systems operations
- Processing services
- Network services
- Systems software products
- Applications software products
- Turnkey systems

Exhibit 1

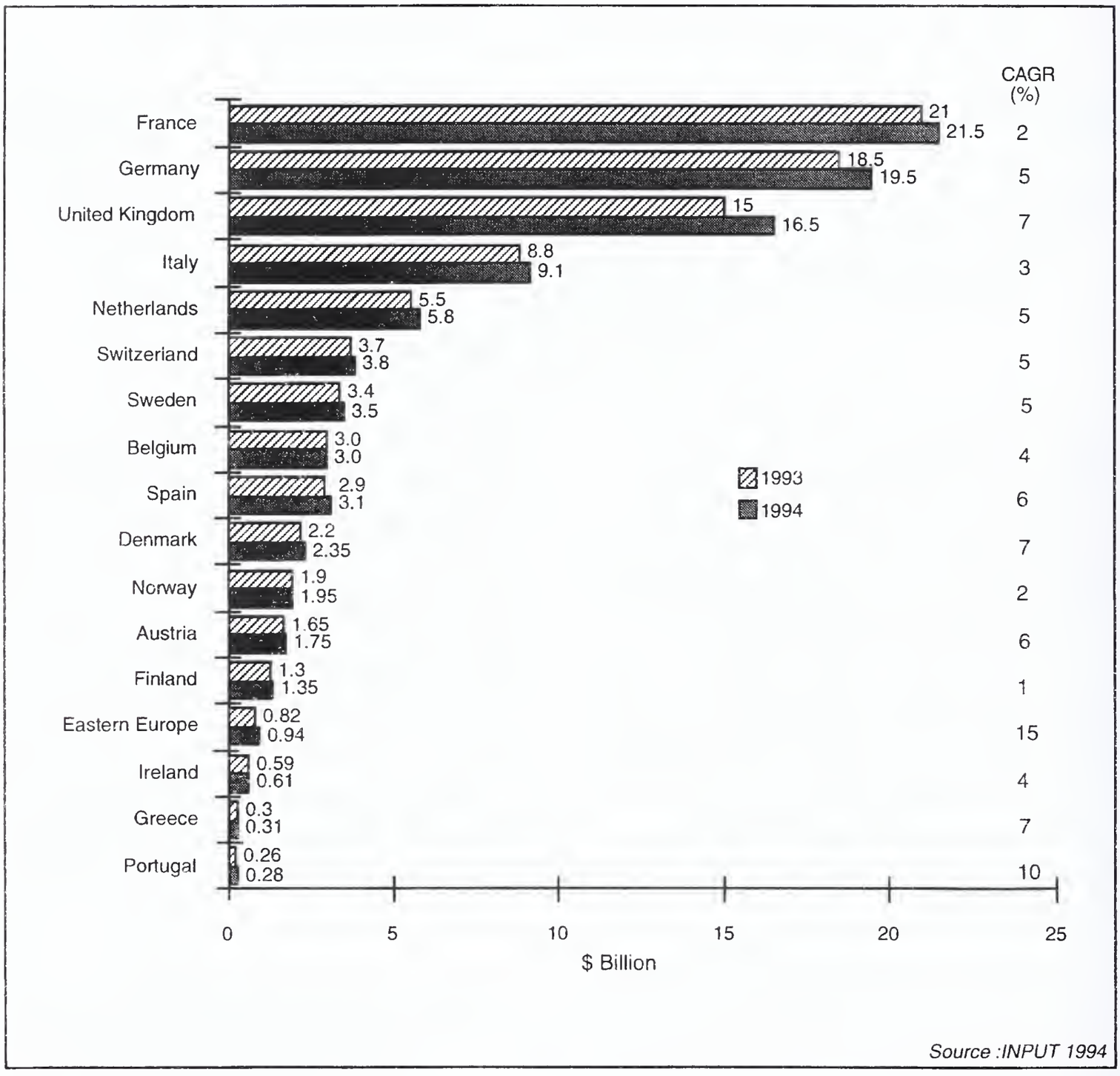
Top Four Countries Fill 70% of Information Services Market, Europe



Source: INPUT

Exhibit 2

European Information Services Market, 4% Overall Growth in 1994



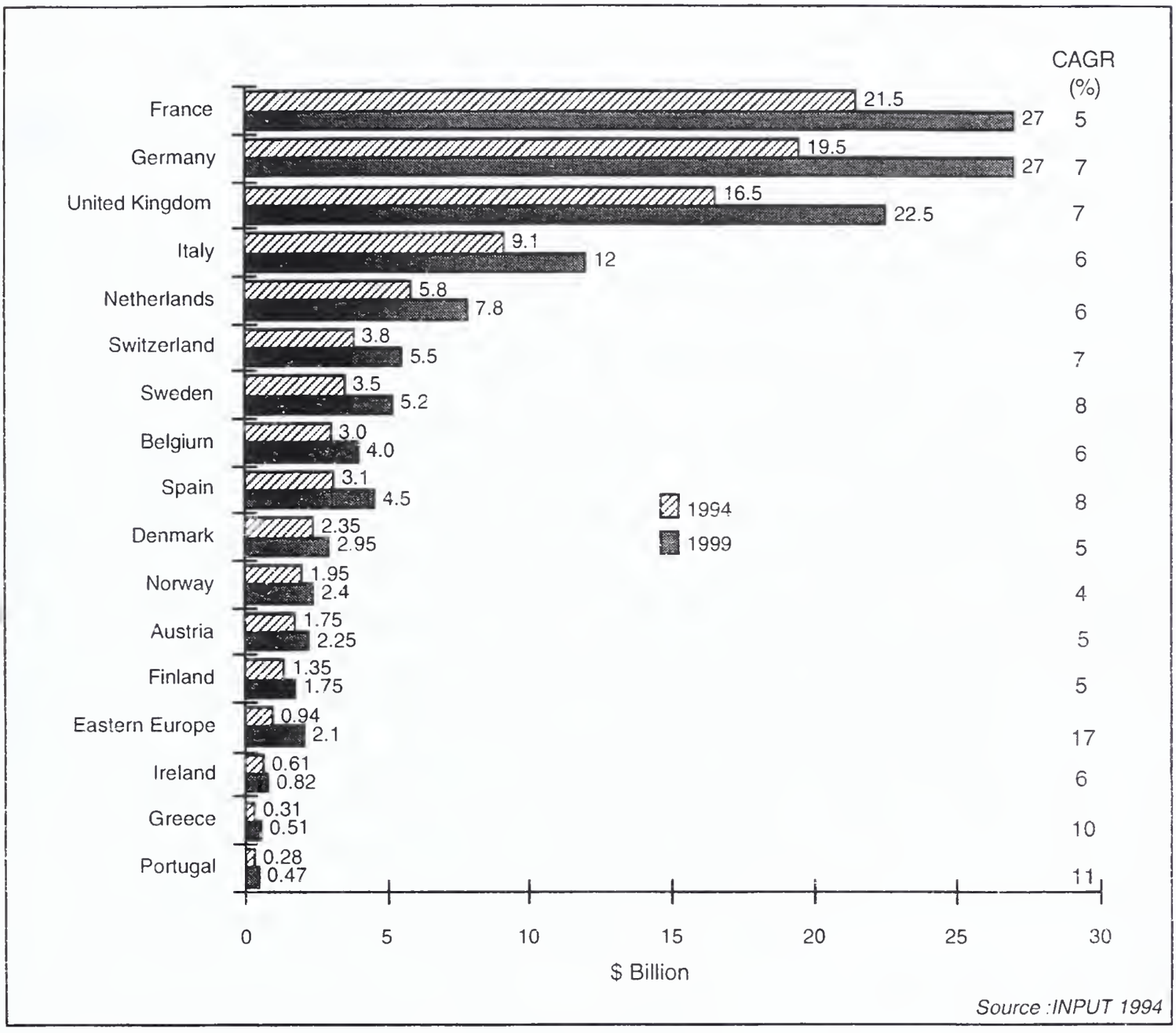
Note: Excludes equipment services

Exhibit 2 shows the anticipated growth for the market in each country during 1994.

Exhibit 3 charts the forecast for each country over the next five years to 1999.

Exhibit 3

Information Services Market, Europe, 8% Overall Growth 1994-1999



Note: Excludes equipment services

The five-year forecast for the information services market (covering software, services and maintenance) is that it will grow from $95 billion in 1994 to $129 billion in 1999, a CAGR of 6%. The comparable growth in 1994 is predicted at 4%. Both these figures include inflation.

Investment in information services across Europe does not mirror the GDP profile of each country. For example, the GDP of Germany is around one third higher than that of France, but spending on software and services is 20% higher in France than in Germany. Similarly, Italy has a larger GDP than the UK but the UK market for

software and services is nearly double that of Italy.

Vendors emerge from recession lighter and fitter

Vendors in Sweden, Finland and the UK have been fighting for survival in a period of recession for some two and a half years. As economic recovery proceeds the surviving vendors have emerged lighter and fitter, more capable of meeting rapid changes in market demand and competition.

Among European vendors, the French have been the most successful in expanding beyond their own national boundaries. Cap Gemini Sogeti, Sema and GSI have all established strong international businesses. However the result of recession and rapid changes in user needs have left many French vendors lagging behind their competitors from elsewhere in Europe.

Weaker French vendors will need further restructuring. For individual vendors this is likely to take the form of:

- Re-organising to establish more software product-related skills and services
- Reducing staff in the area of applications software development
- Replacing or re-skilling staff in new software and systems engineering
- Seeking new sources of funding for business development.

As the recession lifts in France, local vendors will find that they face stronger competition from other lighter and fitter European vendors looking to establish themselves as international firms.

This Research Bulletin is issued as part of INPUT's Information Services Market Analysis Program. If you have questions or comments on this bulletin, please call your local INPUT organization or Peter Lines at INPUT, 17 Hill Street, Mayfair, London W1X 7FB, UK Tel: +44 (0) 71 493 9335.

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A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. V, No. 13

December 1994

The New Interstate Banking and Branching Law of 1994 ...

Impacts on the Banking Industry and Information Services

Overview

Bank merger and acquisition planning, discussed in INPUT's 1994 *Banking and Finance* industry report, must consider the impact of the Clinton Administration's recently enacted (September 29, 1994) Interstate Banking and Branching Law. This Research Bulletin expands on the report's analysis, Outlook for Regulatory Reform, and discusses the impact of the new legislation, which allows banks to operate multi-state branching systems.

Banks: A Definition

The general definition of a bank is that it is a financial institution that both accepts deposits and makes loans. It is this type of institution that is the primary focus of the new interstate branching legislation.

In addition to operating traditional banks, the larger bank holding companies often form special-purpose subsidiaries (SPSs) to handle a single type of financial service (e.g., mortgage banking, leasing, industrial finance, credit card processing). SPSs are often located in areas where operating costs are especially attractive. For example, in moving its credit card operations to South Dakota, Citibank was able to acquire space and staff at much lower rates than it was paying in the New York area. State and local economic development authorities have frequently encouraged such moves, especially in areas of chronic underemployment. Some of their incentives have included subsidized financing for facilities (e.g., through industrial revenue bonds), training grants for staff, and favorable tax treatment.

While some SPS units are formally chartered as banks, others use a different legal structure. Although SPSs are integrated into the industry's regulatory and processing infrastructure, they differ in one important respect from traditional banks: They are generally only on one side of the loan/deposit equation. For example, though a credit card bank makes loans (through the card), it does not accept deposits; its loans are funded through other means (e.g.,

capital contributions from the holding company, securitization of card portfolios, etc.).

Pre-Legislation Environment

Before enactment of the recent legislation, the regulatory situation facing banks and holding companies was generally as follows:

- Prior to 1985, banks and bank holding companies were generally not allowed to start or acquire banks outside their home state. However, there was no prohibition against a bank acquiring the operations of a competitor in the same state as long as the transaction did not create undue monopoly concentration. Although certain existing multi-state operations (e.g., First Interstate Bank) were grandfathered in, each of the individual state banks had to be a separately capitalized, standalone entity.

- Nevertheless, the FDIC and other federal regulatory authorities did permit several large and profitable banks and S&Ls to acquire failing institutions in other states if there was no local institution able to absorb them. For example, in 1982, Citibank acquired a large failing California institution (Fidelity S&L, headquartered in Oakland) when no local bank was willing to take it off the regulators' hands.

- Following a Supreme Court ruling in 1985, federal regulators began to allow bank holding companies to establish and/or acquire separate banks in multiple states under certain defined conditions. This ownership was also subject to state restrictions, which typically included reciprocity between the holding company's state and the state in which the new bank was established or acquired.

- Following this ruling, some states and regions enacted protective legislation to discourage large out-of-state banks from entering their markets through acquisition. At the same time, this legislation was also intended to encourage the development of large regional banks. The growth of NationsBank, now one of the largest in the country, is the result of the Southern Compact, one such pact among a group of Southern states.

- Even where a holding company does own institutions in multiple states, and uses a common naming pattern for all banks, each institution still has to stand on its own from a financial and regulatory standpoint. That is, each institution must still:

  - Be separately capitalized
  - Maintain its own separate books
  - Be separately subject to examination and regulation

- Branching regulations for each individual bank currently remain the province of the individual states. For example, Illinois is a unit banking state; no Illinois bank may have more than one branch. By contrast, California allows unlimited statewide branching, and Bank of America has over 1,000 branches statewide.

- In general, SPSs are not subject to these constraints because they are not banks in the traditional sense (i.e., both deposit accepters and lenders).

The New Legislation

The basic thrust of the new legislation is to eliminate the customer service barriers that exist between multiple banks that are separately incorporated in different states. This would allow institutions such as Bank of America, NationsBank, First Interstate and Citibank to combine their multiple bank charters into one, and operate a single bank with branches in multiple states. Each of

these branches would then be able to offer the full range of deposit and loan services to its customers, no matter where the customer resided, the account was located, or the transaction initiated. Major provisions of the new legislation are as follows:

- One year from the signing of the bill, in September 1995, bank holding companies will be able to acquire or establish subsidiary banks in any state. As today, these will still have to be separately chartered, standalone institutions. This provision essentially ratifies the situation that arose from the 1985 Supreme Court decision, except that reciprocal state pacts are no longer necessary for these acquisitions to occur. Because 14 states still have not made such pacts, this will open up a number of markets, including Wisconsin, Iowa, Kansas, Montana, Missouri and Hawaii.

- Starting June 1, 1997, banks will be able to merge across state lines, provided that states do not meanwhile adopt legislation prohibiting these combinations. Special-purpose subsidiaries can also be converted into banks and merged into the new multi-state branch systems at that time. The resulting institutions would be headquartered in a single state, but able to operate branches in any other state. States can also adopt legislation to permit multi-state branching before June 1, 1997.

- In order to control concentration in both local and national markets, mergers and acquisitions would be limited in cases where the combined bank would control more than 10% of insured bank deposits nationwide, or 30% of the deposits in any single state. However, individual states could waive their 30% limit if they chose.

Key points are summarized in Exhibit 1.

Exhibit 1

Summary of Key Provisions

- 1995 - Bank holding companies can acquire or establish subsidiary banks in any state
- 1997 - Banks will be able to merge across state lines, with some restrictions
- Some limitations apply, based upon share of deposits

Source: INPUT

Proponents of the new legislation cite several key advantages to multi-state branching:

- *Improved customer service* - By expanding their geographic reach and operating through a single unified branch system, large banks can simplify and reduce the cost of the checking, funds transfer and lending services they offer corporate customers. Similar advantages will also accrue to retail customers (see *ATM Usage and Retail Banking Transactions*).

- *Reduced portfolio risk* - Expanded branch networks should also allow banks to diversify their lending, both geographically and across industries, therefore reducing their risk exposure to special problems that may affect a given industry or region.

- *Reduced operating and regulatory costs* - By operating one bank instead of many, the costs of institutional overhead (staff, facilities, etc.) and regulatory reporting can be significantly reduced. The head of one of the largest banks has estimated that it can save over $50 million per year through such overhead cost reduction.

Impact on Bank Merger Activity

What is the likely impact of this new legislation on bank merger activity? In INPUT's view, not much.

The basic rationale for bank mergers is to acquire additional customers while reducing the costs of the combined operation. In looking at potential merger partners, a bank has three options:

- *In-market* mergers, where two institutions are in the same state. Recent in-market transactions have included Chemical/Manufacturers Hanover, and Bank of America/Security Pacific.

- *Regional* mergers, where institutions are in neighboring states. These mergers are often done in the context of a regional pact, such as the Southern Compact, which ultimately led to the formation of NationsBank.

- *Out-of-market* mergers, where two institutions are in different states. One recent example is the Bank of America/Continental Bank transaction.

In the first two situations, there are economies of scale in consolidating some activities. For example, SPSs are typically holding company subsidiaries, and duplicate mortgage companies, leasing companies, credit card processing facilities, etc., can be combined for cost savings. Corporate advertising/identity programs can also be consolidated, giving a better return for advertising expenditures as regional identity and marketing programs are developed. Some operations can also be consolidated through the use of processing services contracts or subsidiaries run by the parent holding company.

With in-market mergers, there are additional savings available from closing overlapping branches and ATM facilities, merging duplicate operations such as credit and lending, corporate processing services and retail services, eliminating duplicate corporate staffs and regulatory reporting, etc.

However, all of these opportunities are available today under the current regulatory environment. Interstate banking brings essentially no new advantages to the in-market merger. And the primary advantage to regional market mergers is the reduction in overhead cost identified earlier. Without other compelling reasons for a merger, these potential cost savings are not large enough to motivate additional new mergers; nor would the lack of these potential savings stop mergers that were otherwise justified on strategic or competitive grounds.

Holding companies that already have multi-state operations will obviously move to combine their separate banks into one, for the reasons cited above. Customers of First Interstate Bank, Citibank, Bank of America, NationsBank and others will see improved service, and the banks themselves will profit. But these are new mergers in name only; the original acquisitions took place years ago.

Out-of-market mergers have historically been fewer in number, because there were fewer advantages to be found. The BofA/Continental merger is a unique situation based on the unusual synergy between the two institutions. Continental is a corporate bank in a unit-banking state, with a client base that has little overlap with BofA. Continental had a reputation for smooth operations that could easily be continued under the acquisition. By acquiring Continental, BofA gained a large new base of corporate customers whose loan requirements had never been funded by a large deposit base. The lack of a branch network was actually an advantage for BofA, as it made the acquisition easier to assimilate.

In this case, the major advantage of a multi-state branching law would have been to simplify the bank's business relationships with large, multi-state customers. Again, this is a minor item, not a strategic issue that would decide the fate of a potential merger.

Impact on Information Services

Although the outcome of the pending legislation was not clear when INPUT originally developed its 1994 market projections, passage of the law (in much this form) was anticipated and considered in the preparation of the industry forecast. Accordingly, the final result is not significantly different from the scenario presented in the 1994 Banking and Finance industry report.

The increase in merger activity will likely be most pronounced in the states that currently do not have any reciprocal banking compacts.

The approach to consolidating operations in merger situations will not change as a result of this legislation. As today, systems will be evaluated for their commonality of function, and operations will be converted to common systems on an individual basis as dictated by potential cost savings.

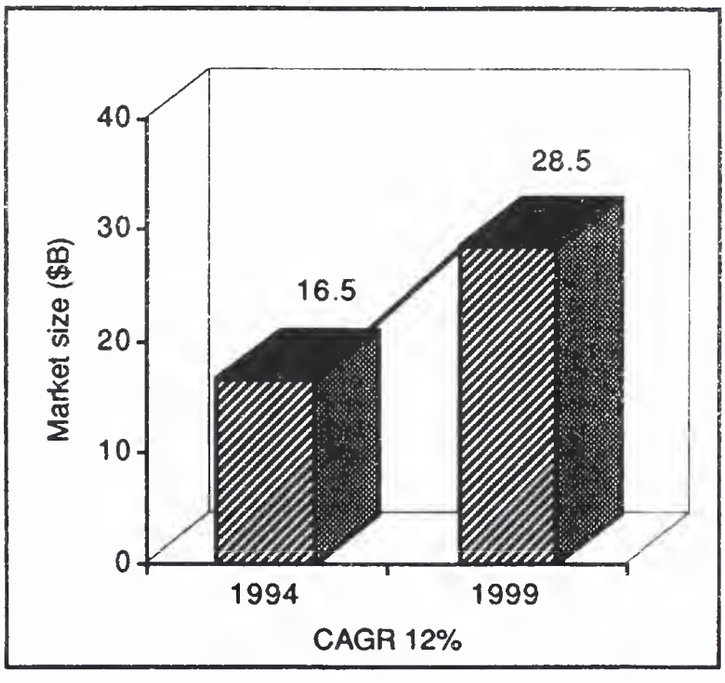
Most large legacy systems have the capacity to absorb significantly increased transaction volumes without substantial change, and continuing advances in mainframe power and price/performance guarantee a continued life to many such systems. Reengineering of legacy systems will continue, using client/server front ends and assorted back-end database servers to improve performance and user friendliness. The market for both software and professional services will continue to be strong in these areas.

Professional services and systems integration (SI) activities will also be required to support database and processing conversions associated with mergers or acquisitions. Balancing the potential loss of site licenses (as a result of operations consolidations) is the potential growth in software product sales as banks expand customer services and banking product offerings in the new, more competitive, financial arena.

One effect of the growing importance of systems integrators to banking is reflected in INPUT's 1994-1999 market forecast. Applications software products, the largest category of information services spending in this industry, will grow at 9% over the five-year forecast period, while software products delivered through systems integrators will increase at 22%. The growth difference does not reflect the total market size, however, and the SI-based market is growing from a comparatively small base. INPUT's estimate of overall information services spending in this marketplace for 1994 and 1999 is shown in Exhibit 2.

Exhibit 2

Banking and Finance, Information Services Market, 1994-1999



Source: INPUT

Finally, INPUT's outlook on the future of the industry remains basically unchanged. Because this new legislation does not generate any compelling new savings for banks, nor any compelling new incentives to merge, we continue to see an industry that will be highly fragmented, with many thousands of small local institutions competing successfully with a few regional and nationwide giants.

A good analogy may be the retail consumer market of 20 years ago. At that time, large department stores coexisted with small specialty stores, and both were profitable. The big change in the retail market has been the evolution of the discount/ warehouse type of operation. No such structural change appears likely in the banking market.

While recent moves such as Microsoft's acquisition of Intuit have raised the stakes in the home banking market, this is still an over-analyzed, underdeveloped situation that does not pose a serious threat to the banking business itself. In the 20+ years since they were first deployed, ATMs have only slowed the growth of branch banking, not stopped it. And ATMs have had no apparent impact on the number of institutions or other industry demographics. For example, small local banks—even unit banks, in Illinois—can all issue ATM and credit cards to their customers. Indeed, by providing the facility for simple, low-cost access through home computers, Microsoft may actually help the small local institution to survive and compete more effectively against the corporate giants.

This Research Bulletin is issued as part of INPUT's Information Services Market Analysis Program—U.S. If you have questions or comments on this bulletin, please call your local INPUT organization or Robert L. Goodwin at INPUT, 1881 Landings Drive, Mountain View, CA 94043-0848, (415) 961-3300.

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. VI, No. 1 1995

U.S. 1994-1999 Information Services Market - Many Sectors See Strong Growth

1994 - A Good Year

INPUT has just published its *U.S. Market Forecast Compendium*, for the period 1994-1999. It summarizes, in one document, the information services user expenditure forecasts for 15 industry sectors, seven cross-industry market sectors, and eight product service categories. It also provides three total U.S. market forecast consolidations. Each forecast is presented in a simple, easy-to-read table, and the report comes with a 3.5" disk containing the forecasts in Excel spreadsheet format.

The growth in user expenditures for information services, from 1993 to 1994, was 11%, an improvement over the 10% year-to-year growths seen from 1991 to 1992 and 1992 to 1993.

Exhibit 1 summarizes INPUT's forecast of total U.S. expenditures for information services for 1994 and 1999. The compound annual growth rate (CAGR) shows an improvement to 12% over the 1993 to 1994 growth of 11%. Figures are rounded.

Such an increase reflects the steadying effects of a return of both business and consumer confidence in the U.S. economy, and the belief that fundamental controls will be exercised by the government to stimulate and maintain such growth throughout INPUT's market forecast period.

Exhibit 1

U.S. Information Services Expenditures, 1994 and 1999

1994 ($B)	1999 ($B)	CAGR 94-99
152	271	12%

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Numbers, Numbers, Numbers

INPUT research produces an analysis and forecast of user expenditures for information services by industry and products/service

category. The following exhibits summarize the relative performance of various INPUT industries and product/service sectors in terms of information services expenditures. Dollars are rounded to the nearest billion.

Industry Growth - Exhibit 2 notes the five industries with the greatest five-year growth (CAGR) rates.

Exhibit 2

Industries With Greatest 1994-1999 Growth in Information Services Expenditures

Industry	1994-1999 CAGR %
Telecommunications	19%
Retail Trade	16%
Discrete Manufacturing	15%
Process Manufacturing	15%
Health Services	13%

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Not surprisingly, the telecommunications industry, riding the boom in the use and application of communications technology to all areas of business and personal activity, will experience the highest growth rate over the next five years. The retail trade and discrete and process manufacturing market sectors will respond well to the revitalized U.S. economy and information services expenditure growth during the 1994-1999 period shows an increase over the growth for similar expenditures from 1993 to 1994.

Industry Size - Looking to the future, Exhibit 3 identifies the industries with the largest 1999 expenditures for information services.

Exhibit 3

Industries With the Largest Expenditures for Information Services in 1999

Industry	1999 Expenditures ($B)
Discrete Manufacturing	33
Banking and Finance	29
Federal Government	17
Process Manufacturing	16
State and Local Government	15

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The three largest industries in 1994, in terms of information services spending, remain the largest in 1999. Although this is expected for the key banking and discrete manufacturing industries, the federal government's growth in expenditures may decrease dramatically if the considered movements towards privatization of public services become a reality as the millennium approaches.

Cross-Industry Market Growth - INPUT defines *cross-industry* market sectors as those which involve multi-disciplinary applications such as human resource systems, accounting systems, etc. If a service or product is specific to one industry, then information services expenditures for it are included only in that industry forecast.

Exhibit 4 identifies those cross-industry market sectors with the greatest growth in user expenditures from 1994 to 1999.

Planning and analysis, which includes expenditures for spreadsheet, project management and financial modeling (or planning) systems and applications software, will have the highest growth rate.

Exhibit 4

Cross-Industry Sectors With the Greatest 1994-1999 Growth in Information Services Spending

Cross-Industry Sector	1994-1999 CAGR %
Planning and Analysis	15%
Office Systems	14%
Education and Training	13%

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Cross-Industry Market Size - Exhibit 5 identifies the three cross-industry sectors that will have the largest expenditures for information services in 1999.

Exhibit 5

Cross-Industry Sectors With the Largest Expenditures for Information Services in 1999

Cross-Industry Sector	1999-Expenditures ($B)
Office Systems	7
Accounting	7
Planning and Analysis	6

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Although individual cross-industry market sectors are smaller than most major industry sectors, collectively they represent a consistent 14% to 15% of industry-related information services spending during the period 1994 to 1999.

Product/Service Spending - Cutting across all the industry and cross-industry markets are the product/service market sectors which satisfy industry and cross-industry information services needs. Such categories include professional services, outsourcing, applications software products, etc. The eight product/service categories tracked by INPUT are noted in Exhibit 6, with an indication of user expenditures forecast for 1994 and 1999, and the five-year growth (CAGR) which INPUT projects for each sector.

Exhibit 6

User Expenditures by Product/Service Sector, 1994-1999

Product/Service Sector	1994 ($B)	1999 ($B)	CAGR '94-'99
Application Software Products	28	56	15%
Professional Services	23	38	11%
Processing Services	23	35	9%
Systems Software Products	24	35	8%
Network Services	14	32	18%
Outsourcing	14	31	17%
Systems Integration	11	23	15%
Turnkey Systems	15	22	8%

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The product/service categories are ranked in order of 1999 market size, showing the dominance of user expenditures for applications software products. Already the largest information services sector in 1994, with 18% of total information services spending, applications software products will grow to 21% of such expenditures in 1999.

More Details?

This bulletin offers a global view of user expenditures for information services, by various industry and product/service categories, for the years 1994 and 1999. It also notes the five-year growth rates applicable to those expenditure forecasts. Much greater detail is available in the INPUT publication, *U.S. Market Forecast Compendium, 1994-1999*, issued in December, 1994, including:

- Forecasts for all years from 1994 through 1999 and actual expenditures for 1993
- Product/service expenditures for each industry and cross-industry segment
- Product/service sub-category expenditures (e.g. separate mainframe, minicomputer and workstation/PC expenditures for applications software products, by year) for each industry and cross-industry market.
- Detailed spending on other non-industry-specific markets such as on-line data bases and news services, and utility and other processing services.

If these information services forecasts are useful to you, they are summarized in the 1994 *Forecast Compendium*—a concise, handy tabular reference to all INPUT's 1994-1999 U.S. user expenditure forecasts. Those wishing industry or sector analysis should use the *Compendium* in conjunction with the full industry, cross-industry or product/service sector report.

Readers of this research bulletin that don't already have the Compendium or specific industry or product/service sector reports in which they are interested, should contact their INPUT account manager, the nearest INPUT office or the individual identified at the bottom of this page.

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. VI, No. 2 1995

INPUT is Bullish on the Internet

What's In a Name

If there is any single word that today invokes an image of great promise for dramatic and beneficial changes in the ways both individuals and businesses conduct (or will conduct) their everyday activities, it is—Internet.

Internet is one of the few "technology" terms that enters into everyday business and personal conversations that does not require further definition, explanation or a placement in context. The term "surfing," most commonly applied in the past to mindless flipping through television channels (e.g., surfing the cable programs), is now acceptable terminology for those with inquiring minds who surf the Internet. These individuals are discovering the growing population of resources available to network users.

Many companies, while publicly proclaiming a "wait and see" attitude or skepticism for the commercial value or potential of the Internet, are privately (and aggressively) seeking ways to use this resource to open new markets, gain market share in existing markets or improve the ways they do business. For other businesses, interest in the Internet is simply an acceptance of the current popularity of the concept of networking to the home. Business enthusiasts are seeing their optimism and belief in this resource recorded in interviews and articles in newspapers, trade journals, periodicals and the broadcast media. Almost everyone has an opinion, and the majority of those with opinions are strong supporters of the potential for and the value of the Internet.

Security? Information Overload?

Many points raised by the skeptical minority are valid. Security is abysmal, as highlighted in the highly publicized recent arrest of Kevin Mitnick, a legendary "hacker" who allegedly obtained credit card numbers and files from San Jose-based Netcom, an Internet service provider. But Mitnick was caught, because a computer security expert was able to trace his activities and locate his place of residence.

Is security—or the lack of it—a cause for concern? Of course. But so were check forgeries and insufficient balances in the early days of demand deposit accounts.

What about information overload? The quantity of information (and resources) available on or through the Internet is huge, and the quality of much of it is suspect. Why? Because most of the data on the Internet today is unedited. A problem? Yes—especially when compared to on-line

data-rich information resources driven by sophisticated inquiry engines, such as Mead Data Central's Lexis®/Nexis® Services.

Other Internet problem areas include file transfer and payment systems. But the Internet's problems are appropriate to a new resource—one in which the details of use and application are just catching up to technology. Recognition and acceptance are typically more difficult to obtain in the early stages of any new product, service or resource, and neither attribute is currently lacking for the Internet. Acceptance seems to be strongest at the personal (or individual user) level, but business recognition is sure to follow.

INPUT's Position on the Internet

No surprise here. We gave you our opinion in the title of this research bulletin. INPUT is bullish on the Internet.

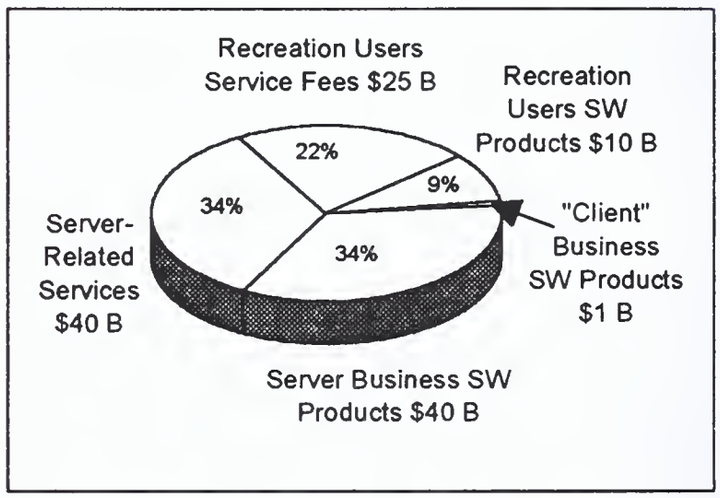
INPUT's president, Peter A. Cunningham, in a December 1994 speech to Japanese business executives in Tokyo, stated that the Internet population will grow from 25 million today to more than 200 million by the year 2000. He predicted that the Internet will change the way people relate to each other, and to business, government and society in general. He stated, "The Internet will do for personal networking what the minicomputer did for personal computing."

In sizing the financial potential for the Internet, Mr. Cunningham noted that consumer usage on the Internet will potentially exceed $200 billion by the millennium. Business-to-business usage will trail somewhat, reaching over $50 billion in the U.S., and about half that amount internationally.

Looking at just the U.S. Internet market in 1999, Mr. Cunningham estimated total spending at $116 billion. A breakdown of this spending is detailed in Exhibit 1, below, with service fees, products, services, business and recreational use noted.

Exhibit 1

U.S. Internet Market, 1999



Source: INPUT

Users will find a broad and rich selection of services and products on the Internet, as indicated in the sampling shown in Exhibit 2.

Exhibit 2

What Will You Get?

- Interactive Television
- Entertainment
- Video Conferencing
- Education
- Communications
- Banking
- Security
- Insurance
- Retailing
- Government
- ...and many other capabilities ...

Source: INPUT

The weaknesses of the Internet—such as security, file transfer and payment systems—are just starting to be addressed by vendors such as DigiCash, Netscape Communications and RSA Data Security, Mr. Cunningham noted.

In addition, he views the huge potential of the Internet market acting as a magnet for

vendors of all kinds, from Microsoft, IBM, AT&T, MCI and TCI, to hundreds of smaller vendors and thousands—if not tens of thousands—of individuals. They will introduce the technology and services to solve current Internet problems.

Mr. Cunningham stated, "The Internet phenomenon is already creating overnight millionaires. It also poses a challenge for established services companies who are being dragged 'kicking and screaming' on to the Internet." He notes that many smaller vendors—such as Global Internet Access Corporation—offer lower prices than the major vendors. He identifies content owners as establishing their own Internet access to complement (and eventually replace) the established network services distribution channels.

Putting Our Money Where Our Mouths Are

INPUT has studied and forecast the information and network services markets for more than 20 years. In recent years we have examined business process reengineering, outsourcing, downsizing, client/server and other new concepts, phenomenons and architectures, with the intent of identifying and quantifying spending for key initiatives early in their life cycle.

The Internet—and its potential for affecting us both as individuals and as businesses—represents one of the most significant resources to become available in recent years. Although we are forecasting a $116 billion market for 1999 (Exhibit 2), we believe that this is only the beginning.

To insure that we identify, understand and project the information services spending related to the Internet, INPUT will include a section in each of our 1995 Market Analysis Program industry reports (15 vertical markets and 7 cross-industry markets) entitled *Internet Use and Applications*. Where there is sufficient data, we will also forecast Internet spending for the years 1995 and 2000 for each industry report.

In addition, INPUT has established a new research program to track the Internet market and is expanding other programs to include richer Internet components. We will pay close attention to the Internet in the coming years and in-depth reports will be issued regularly.

Initial assessment of the Internet market, as presented by Peter Cunningham in a series of recent industry and executive briefings, is summarized in the document, *Internet Market Projections*. If you have not received your free copy, please contact your INPUT representative or call us at the number listed below.

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Electronic Commerce/Internet

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Electronic Catalogs Market: Status & Directions

Describes manufacturers and distributors that sell products through catalogs, to the media/ direct market community, to printers and publishers, and to IT community (electronic information service providers, CD-ROM software providers—Dataware; network service providers; multimedia vendors).

U.S. Outsourcing Information Systems

Outsourcing Market Forecast, 1994-1999

This annual report examines major trends, issues, user decision processes and buying patterns, leading vendors and their market shares, and provides 5-year forecasts.

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. VI, No. 3 1995

New Realities for the Information Services Business?

As we approach the second half of the 1990s, the information services market in both the U.S. and Europe is growing at a rate below that of the 1980s, but above the growth experienced in the early 1990 recessionary years. Does the change in the rate of growth represent a change in the fundamentals of the information services business? Do new "realities" apply? This research bulletin offers observations on the European information services market by INPUT's European Market Analysis Programme, and compares it with INPUT's U.S. Market Analysis Program's assessment of the U.S. information services market.

The European Viewpoint

In December, 1994, INPUT's London office issued a research bulletin to Market Analysis Programme - Europe subscribers describing the new realities of the information services business in Europe. Recognizing a return to economic growth in Europe after the recession of the early 1990s, the report noted that IT executives and managers continue to experience highly demanding competitive conditions. These conditions include both increasingly demanding clients and numerous competitors for the products and services they offer.

The analysis noted that these new realities also impact the information services market and require vendors to reassess the overall environment in which they must operate. Considerations include:

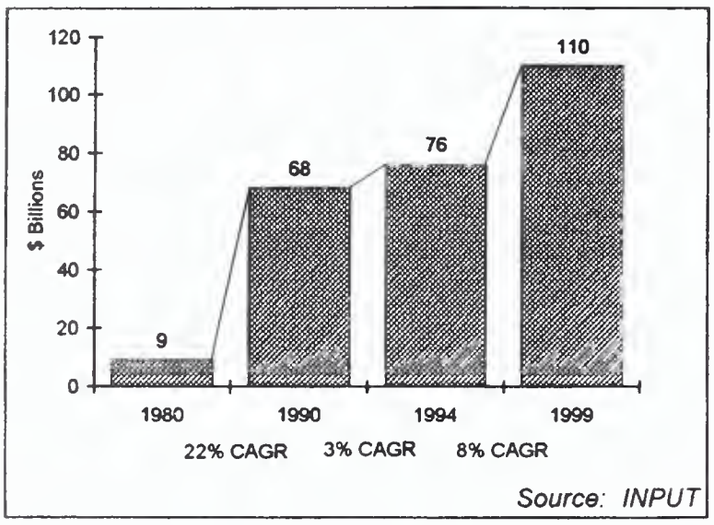
- Expectations for growth in user expenditures on information services
- The growth of technology and its impact on information services
- The changing economic environment, which will affect user expectations and actions

Factors Affecting Growth

Changes in the Information Services Growth Scenario - As noted in Exhibit 1, the European information services market experienced very strong growth from 1980 to 1990, increasing at a compound annual rate (CAGR) of more than 22%. From 1990 to 1994 that CAGR dropped to 3%, and from 1994 through 1999 INPUT forecasts it will be 8%.

Exhibit 1

European Information Services 1980-1999



Source: INPUT

The drop in growth from 1990 to 1994 is partially attributable to the economic slowdown that affected virtually all countries worldwide. As European economies emerge from the recession, however, growth in IT spending is not returning to the higher rates of the 1980s, and INPUT forecasts information services growth at only 8% per year for the last half of this decade (as opposed to the 22% seen from 1980 to 1990).

INPUT feels that two reasons economic growth has not translated into boom conditions in the IT market are that organizations are adjusting to new deflationary pressures, and earlier high growth rates for IT and information services are being questioned as part of an overall reassessment of business objectives, needs and budgets.

The result is that the earlier growth patterns for information services no longer apply.

The Growth and Impact of Technology - In the European market, the sophistication and functional capability of hardware continues to accelerate, but the development of software has not progressed at the same rate. Complex software products and systems are becoming more and more difficult to develop and implement, and it has become increasingly apparent that different sets of rules apply to the development of tangible (hardware) and intangible (software) products.

The special requirements of software development and implementation create opportunities for services firms that fully understand the true nature of the challenges in this industry.

The technology (or more accurately, the architecture) that is currently having the most immediate impact on the market is client/server computing. This technology illustrates the lag effect, in respect to services, that occurs with some technologies, since it is only in the last few years that client/server computing has begun to have a major impact on the services markets, despite the fact that the technology/architecture itself has been available in a variety of forms for some time.

New *hot* technologies, such as multimedia, object oriented programming (OOP) and the Internet have as yet had little impact on the European services marketplace. Their use remains restricted to early adopters of the technology who, in general, supply their own technical services and create their own solutions.

Changing Economic Environment - European economies are perceived as moving from an inflationary environment towards one of deflationary pressures. As a result of continuing price cuts and discounting in most sectors of the economies, deflation is perceived as the order of the day. This is especially true of the IT industry, which was leading with technology-driven price/performance and quality improvements long before similar trends began affecting other industry sectors.

Information services vendors face a European market in which prices can no longer be easily increased to cover higher costs whenever they occur. Vendors must deal with knowledgeable, demanding customers and a multiplicity of competitors all bidding for the available business. Information services markets, like those of their clients, are becoming typified by oversupply and intense pricing and cost pressures.

Europe's New Realities

At the most fundamental level, the new realities of the European information services market are:

- In the growing complexity of today's IT environment, software products take longer to develop.
- The European economies are moving from an inflationary to a deflationary mode. Price increases will be more difficult to implement, customers are more knowledgeable and demanding, and competition is stronger.
- The halcyon days of 22% yearly growth are gone, but so is the heavily restricted 3% growth of the early 1990s. Information services growth through the balance of this decade will be at a steady 8%.
- Although the overall information services growth will be 8%, selected markets, such as outsourcing (five-year CAGR of 19%), network services (16% CAGR), systems integration (12% CAGR) and applications software products (11% CAGR) continue to offer significant opportunities for vendors, especially those who are selective in their approach to their market.

The U.S. Viewpoint

Overview - This month (March 1995), a *General Business Overview* was prepared by INPUT's U.S. Market Analysis Program for use with all 1995 MAP reports. It observed that, as documented by the U.S. Department of Commerce, economists and business journals, the U.S. economy ended 1994 on a high note—perhaps too high from the Fed's viewpoint— with growth at approximately 4.6%. Since employment has also returned to an acceptable level, there is some concern that the strong growth increases the threat of inflation in 1995. However, January's gain in employment—134,000 people—was well below 1994's monthly average gain of 290,000.

The January employment figures have generally been regarded by both economists and the financial markets as the first solid evidence of slower growth. Most economic observers now feel that growth should be at about 2% by the third quarter of 1995, giving the American economy what some economists are calling a "soft landing." There is also general agreement that the economy seems to be in a mid-cycle slowdown. The risk is low of that slowdown becoming another period of recession in late 1995.

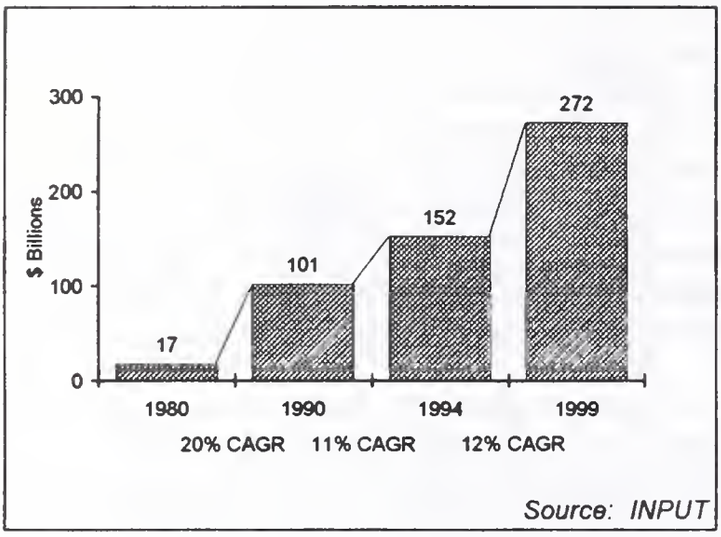
Economic Forecast - Overall, the outlook for the U.S. economy in 1995 is for controlled, steady growth in the 5.7% range with inflation at about 3%, and corporate after-tax profits at approximately 7%, down slightly from 1994's 10%.

The U.S. economic environment seems headed towards a period of steady, sustainable growth, offering stability and the absence of significant inflationary or deflationary pressures for the next few years.

Although competition will continue to affect pricing, and margins in some highly competitive areas may be squeezed (e.g. professional services), INPUT forecasts the total U.S. information services market to grow to $272 billion by 1999 (see Exhibit 2).

Exhibit 2

U.S. Information Services 1980-1999



Source: INPUT

The growth from 1980 to 1990 was at a 20% CAGR, dropping to 11% from 1990 to 1994, and increasing to a 12% CAGR from 1994 through 1999.

The five year growth for U.S. information services (12%) is 50% higher than that forecast for the European market. Although supported by current research, INPUT feels that the U.S. growth rate is still conservative, and that as the new technologies noted below become more deeply interwoven into the fabric of American information technology, higher annual growth rates will occur.

The Growth and Impact of Technology - The U.S. information services market, like Europe, is also benefiting from the growing complexity of the IT environment. U.S. industry is increasingly returning to core business activities and looking to outside experts, knowledgeable in a specific industry, to provide application and technology expertise. This is especially true for network services, outsourcing, systems integration and applications software products—all areas that are growing at a rate faster than the total U.S. information services industry over the next five years.

In 1994, the four information services product/service areas noted above accounted for 44% of the total U.S. information services market. In 1999, they will be responsible for 52% of user expenditures in the U.S. market.

The growth in these market areas is being driven by both a healthy economy and the strong movement towards new technologies—such as the client/server architecture and applications noted for Europe. But the U.S. market is also strongly embracing the use of multimedia, the efficiencies of object-oriented programming and the mind-boggling potential for the Internet.

In the telecommunications-rich U.S. economy, where more and more homes and businesses have fiber-optic (high-capacity) connections to the country's communications infrastructure, any application or information connection seems possible. Such potential is only beginning to be quantified in terms of user expenditures, but the possibilities seem endless, and INPUT believes that business implementations of applications on the Internet will drive expenditures for both network services and applications software products to higher growth rates than are currently being forecast today.

New U.S. Realities?

As in Europe, the U.S. is also experiencing a change in the business climate as companies review their business objectives, assess competition, and develop and sell their products to an increasingly sophisticated market.

Graphic user interfaces (GUIs), such as Windows, are making it easier for anyone to have access to computing power. IT vendors are offering products which limit user

interaction with technological details in favor of user-friendly interfaces requiring little, if any, computing (as opposed to application) knowledge. Business end-users are interested in getting the work done, not in the details of computer technology or methodology. Technology of itself, is becoming less interesting—its value lies in its ability to facilitate business solutions to business problems.

Even with sophisticated application development tools, software products (as in Europe) are taking longer to bring to market. These longer software development cycles are frequently the result of competition-driven overly ambitious function or schedule estimates, or the need to interface new software products to an ever-growing population of installed operating system alternatives or applications software products.

Businesses are downsizing, as noted in our analysis of the European economies. They are becoming more and more cost and profit-conscious, and the old paradigms, such as "cost+profit=selling price," or "build it and they will buy," no longer apply

It is this cost consciousness, however, frequently implemented under the guise of a return to core competencies, that is opening new markets for information services. As the IS function shrinks, and the end-users want results, not DP empires, more and more businesses are looking to outside experts to help them with the IT portion of their business activities. Non-industry-specific IT expertise is shifting away from business and to the providers of information services because they offer a cost-contained, more effective (and measurable) solution to American business needs. This means that as business budgets are tightened (due to economic, competitive or financial performance pressures) spending for necessary IT functions will continue to shift to outside providers, thus allowing continuing healthy growth in the information services industry. In the U.S., downsizing, rather than representing a threat to information services, offers a strong opportunity for continued growth.

Do these conditions constitute a set of new realities for the U.S. information services market? Yes, when compared to the high growth years of the 1980s. Lower growth, deflation vs. inflation, and a concern for value in both information systems and information services are the new realities of the second half of the 1990s.

However, the trends we are now seeing (outsourcing, end-user involvement, longer software development cycles, more sophisticated GUIs, tightened budgets, use of outside technical and applications expertise) are also the continuation of a logical progression as technology becomes less of an end in itself, and more of an asset which must be used in the most efficient manner.

It is this recognition of both the value of the functions provided by technology and information services *and* the desirability of placing responsibility for that function in the most cost-efficient location, that will continue to drive the growth of the U.S. and European information services markets.

This Research Bulletin is issued as part of INPUT's U.S. Information Services Market Analysis Program. If you have questions or comments on this bulletin, please call your local INPUT organization or Robert L. Goodwin at INPUT, 1881 Landings Drive, Mountain View, CA 94043-0848, (415) 961-3300.

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- Acquisition targets

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- Specific vendor capabilities
- Outsourcing options
- Systems plans
- Peer position

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. VI, No. 4 1995

Today the U.S., Tomorrow the World

INPUT's Worldwide Compendium

In December, 1994, INPUT issued the *U.S. Market Forecast Compendium, 1994-1999*. This report summarized, in one concise document, the forecast expenditures on information services in 15 U.S. industry sectors, seven cross-industry sectors and eight product/service categories. In a slim volume with 33 exhibits, it presented INPUT's forecasts of U.S. information services spending through the year 1999—an analysis extracted from some 24 detailed reports.

In April, 1995, INPUT published its first edition of the *Worldwide Market Forecast Compendium, 1994-1999*—a document summarizing the forecast tables from the soon-to-be-released 1995 edition of the *Worldwide Information Services Forecast, 1994-1999* report. The worldwide compendium consolidates the 39 country and regional forecasts from the 400 page worldwide report into a slender, but informative, 50 page document.

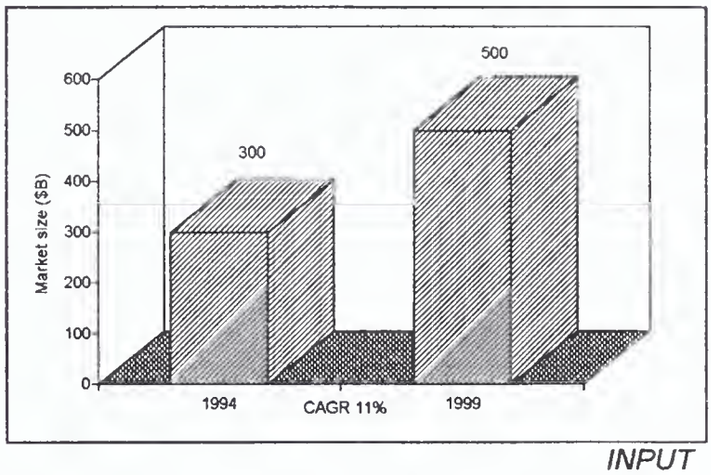
This research bulletin highlights some of the initial findings from INPUT's latest worldwide information services market analysis, including relative opportunity and key growth areas.

Worldwide Information Services

Exhibit 1 shows the growth in the worldwide market for information services—from almost $300 billion in 1994 to slightly more than $500 billion in 1999, at a compound annual growth rate (CAGR) of 11%.

Exhibit 1

Worldwide Information Services Market, 1994-1999



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This growth equates to the rate (11%) forecast for the period 1993-1998 in last year's worldwide market forecast.

With the U.S. economy providing an impressive showing in 1994, the European economy strengthening, and both Latin America and the Asia/Pacific regions indicating strong growth over the next five

years, the modest 6% growth seen from 1992 to 1993 is now a thing of the past.

Worldwide information services market growth from 1993 to 1994 was 8%, up 2% from the 1992-1993 figures, while 1995 expenditures for information services are forecast to be 9% greater than those seen in 1994—and the year-to-year growth is accelerating. In 1999, the annual worldwide information services expenditures growth rate over the prior year is forecast to be 13%.

Regional Growth

Exhibit 2 indicates the information services market growth (CAGR), for each of the five regions tracked by INPUT, for the period 1994 to 1999.

Exhibit 2

Regional Information Services Market Growth, 1994-1999

Region	1994-1999 CAGR (%)
Middle East/Africa	21
Latin America	18
Asia/Pacific	12
North America	12
Europe	8

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As can be seen in Exhibit 3, the fastest growth is occurring in those regions with the smallest expenditure base. In addition, the Latin American and Asia/Pacific regions contain the largest percentage of technologically emerging nations—a factor also driving growth.

Middle East/Africa's growth rate is the direct result of its very small base, and is driven primarily by spending increases in Egypt, Israel, Saudi Arabia and South Africa. Even with its high growth rate, however, the Middle East/African market will represent less than 1% of the worldwide information services market in 1999.

Exhibit 3

Regional Information Services Markets, 1999

Region	1999 Expenditures ($ Billions))
North America	280
Europe	110
Asia/Pacific	95
Latin America	10
Middle East/Africa	5

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Hot Countries, and We Don't Mean Tropical!

Within each of the regions, except Middle East/Africa (for which only a consolidated forecast was done), growth and market size vary by country. Exhibit 4 notes the country (or countries) in each region which will experience the highest overall growth rates from 1994 to 1999.

Exhibit 4

Fastest Growing Country Markets, by Region, 1994 - 1999

Region	Country
North America	Mexico
Europe	Portugal
Asia/Pacific	South Korea
Latin America	Argentina Brazil Venezuela

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South Korea is becoming a power in the Asia/Pacific region, especially as Japan wrestles with both internal problems and a strong yen that is hurting its export sales. Mexico (newly included in the North American Region in this year's worldwide forecast) now seems to be recovering from the recent devaluation of its peso. In addition, NAFTA (the North American Free Trade Agreement) is expected to be a strong force in helping the Mexican economy to grow—with corresponding increases in information services expenditures.

Exhibit 5 indicates the countries in each region with the largest information services markets in 1999. The U.S. and Japan are the major users of information services today, and between them, will continue to account for two-thirds of the worldwide expenditures on such products and services in 1999. France and Germany will be the largest markets in Europe in 1999, followed by the United Kingdom—a continuation of today's market positioning, while Brazil will continue as the largest information services market in Latin America.

Exhibit 5

Largest Information Services Markets, by Region - 1999

Region	Country
North America	United States
Europe	France Germany
Asia/Pacific	Japan
Latin America	Brazil

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Product/Service Spending

Worldwide, from 1994 to 1999, the fastest growing products and services will be network services, outsourcing and application software. Those with the largest expenditures in 1999 will be professional services, systems software and applications software.

The Forecast Compendium

The *Worldwide Market Forecast Compendium, 1994-1999* is available today. It provides, in concise form, 39 country and regional forecasts. All forecasts offer estimates of spending for up to eight information services and product categories, and for many countries, detailed sub-category spending is also provided.

The worldwide compendium is the ideal quick and complete reference to worldwide information services spending for 1994 through 1999—and it comes with a 3.5 disk containing all forecast files in Excel spreadsheet format. Call your nearest INPUT office for information on how to obtain this report.

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Research Bulletin

A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. VI, No. 5 1995

No Deal for Intuit and Microsoft - Implications for Software Vendors?

Microsoft's Surprise Announcement

On Saturday, May 20, Microsoft Corp. announced that it was canceling its much publicized merger with Intuit, the number one provider of personal finance software. The announcement followed, by a scant three weeks, Microsoft and Intuit's vow to fight the Justice Department's suit to stop the merger on alleged antitrust violations.

The Justice Department claimed victory, stating their belief that the only thing that changed since Microsoft and Intuit's fighting words was the fact that Justice had revealed portions of its case to the two companies, and Microsoft saw how strong a case it was.

More credibly, Microsoft stated that the reason it was withdrawing its merger offer was that it felt that the time required by both the trial and the inevitable appeal—almost certainly stretching into 1996—would severely limit its ability to move forward in other areas, especially that of establishing alliances for electronic banking.

Intuit's Chairman, Scott Cook, stated that they regretted Microsoft's withdrawal, since he felt that, at trial, the merger would have prevailed. He also indicated that the Microsoft offer was "unique" and that Intuit would not seek any other mergers.

Exhibit 1

Microsoft-Intuit Key Events

- July 1994 - Microsoft settles antitrust actions in both Europe and the U.S. Agrees to change contracts and remove some restrictions.
- October 13, 1994 - Microsoft announces plan to buy Intuit with a stock swap valued at $1.5 billion.
- February 14, 1995 - U.S. Judge Sporkin rejects Microsoft's antitrust settlement
- April 24, 1995 - Both Justice and Microsoft appeal Judge Sporkin's ruling
- April 27, 1995 - Citing antitrust violations, Justice files suit to stop Microsoft/Intuit merger, and Microsoft immediately appeals.
- May 19, 1995 - Justice requests a delay for the trial, saying Microsoft is "dragging its feet"
- May 20, 1995 - Microsoft drops its merger offer

Source: Various Media

Exhibit 1, above, summarizes the key events in the planned Microsoft-Intuit merger.

Who Won - Who Lost?

The Justice Department - The Department of Justice claims a major victory, saying their case was so well prepared that Microsoft could not have won. As proof, they cite the timing of Microsoft's withdrawal—after they'd seen Justice's case. It's hard to ignore that Intuit's 70+% of the personal financial management software market (controlled by Quicken), when added to Microsoft's 20+% for its Microsoft Money software yields a market share of 90+%—a share many consider to be a *de facto* monopoly. Microsoft responded that it would give Money to Novell, and concentrate on Quicken. With the deal dead, Microsoft will retain Money and concentrate on turning it into the "pre-eminent" product for electronic banking—a logical step considering the advent of the Microsoft Network (see below). Novell, in turn, can concentrate on networking and not be distracted by another product acquisition.

Microsoft - Microsoft's claim that timing of the trial was their primary concern rings true, since it is rare for them to back away from anything that fits so well with their long-term strategy as does Quicken. The cost to break the deal—a $46.25 million payment to Intuit, whose costs only totaled about $4 million—is small change for Gates, who personally spent an amount close to that recently for artwork. Another consideration for Microsoft was the increase in Intuit's stock price, raising the effective cost of the deal to over $2 billion—one-third more than originally planned. With the legal action canceled, however, Microsoft can now get about other key activities, such as the planned August introduction of the Microsoft Network (MSN).

Justice also has an interest in the MSN, since many competitors believe that ease of network access in Windows 95—all you have to do is click an icon—would allow Microsoft to dominate the on-line market, threatening such stalwarts as Prodigy and America Online.

Intuit - Intuit is, perhaps, the big winner. Although it's stock plunged 17% on the first trading day after the announcement (to $62 from $74 1/2), it is still above it's October 1994 price of $50, and the company is about to become $46 million richer from Microsoft's buyout. This is the frosting on the cake, however. The real value lies in being a company aggressively pursued by Microsoft—one they valued so highly that they were willing to pay a heavy premium to acquire it. The value of Intuit's products couldn't have a stronger or more public endorsement. The company is well positioned in a growing market—one that will benefit from the rapidly expanding network access provided by the Internet and the WorldWide Web.

Cook claims that ending the deal permits Intuit to pursue some strategic alliances that would allow it to use Quicken as a neutral front-end for home banking services—an interface that is not allied to other networks.

As a result of the cancellation of the merger with Microsoft, INPUT expects Intuit will move from being an acquisition target back to its more familiar role as an acquirer (e.g. Turbo Tax, MacIntax).

Implications for Software Products Companies

INPUT believes Microsoft's position—that it was the timing and duration of the litigation that caused them to back away from the deal—not the strength of the Justice Department's antitrust case. Justice's selection of when to try a case and the implied duration of litigation are formidable weapons whose implications are considered below. INPUT also believes that software product

market dominance, with its monopoly and antitrust implications, is, in some ways, an industry phenomenon driven by the desire for and adherence to both formal and *de facto* standards.

Standards - One reality of the $57 billion 1995 U.S. software market tracked by INPUT is that standards are viewed as beneficial by almost everyone—vendor and buyer alike. Standards mean that product conformity assures plug and play capability, or close to it. It makes it both easy to buy packaged products you can immediately install and use, and it also allows development of new products for an established market.

Not surprisingly, standards tend to favor those who develop them, and through general acceptance, become imposed on a market. In the '60s and '70s, IBM set the software standards for the data processing industry. In the 1990s, Microsoft, with its DOS, Windows, Windows NT and soon to be Windows 95, dominates the personal computer market. Competing environments, such as "open" systems (e.g. UNIX), have some popularity with specific businesses, products, industries or individuals, but they do not dominate. Microsoft's operating environments dominate. Ask IBM, the world's largest computer company, how well their OS/2 competes with Windows in any of its versions—not well.

The point is that both formal and *de facto* standards and the market realities surrounding them, do not constitute a predatory monopolistic environment as much as they reflect the needs of both buyers and sellers for a product that can be developed with confidence for a market where it can be easily and immediately used. Microsoft's operating environments allow that.

In terms of market share, if Intuit's Quicken holds 70+% of the personal finance software market, and Intuit isn't being accused of monopoly, why would Microsoft face such an accusation if they divested their Money product, and simply maintained Quicken's market share. The answer is: Justice might not win that argument.

INPUT believes that fear of losing a monopoly suit was not the reason Microsoft quit the Intuit deal. The reason was, as Gates stated, the ...

Threat, Expense and Timing of Litigation - Microsoft is no stranger to litigation. But it usually chooses its battlefields with care. It might well have won this case, but the publicity and timing conflicted with other key Microsoft plans (such as the introduction of the Microsoft Network and Windows 95), and Microsoft chose to back off.

Such considerations are now becoming more common in the rapidly growing Workstation/PC software products market.

Some deals, like the proposed Bell Atlantic-TCI merger, die because of conflicting executive personalities; the Microsoft-Intuit deal died because of timing.

In the fast-moving world of PC software products, alliances and mergers will continue to be attractive, as both parties consider the benefits of increased market share and decreased competition. But for many deals, like Microsoft's, timing will be important, and for those that it chooses to challenge, the Department of Justice has just learned a valuable lesson—it's not just the strength of your case, it's also how rapidly you pursue and how long you prolong litigation, that will have a bearing on the outcome.

Small software vendors needn't worry, unless of course, they are suing, in which case timing may be a weapon in their arsenal. Large vendors, such as Microsoft can hope that

Justice believes Microsoft quit because of the strength of Justice's suit. However, these companies must now also consider that Justice has seen the power of timing—and the fast response that it can achieve—and will be a stronger, wiser antitrust opponent in the future.

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Research Bulletin

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Vol. VI, No. 6 1995

The Telecommunications Industry - "A Whole Lot of Shakin' Goin' On!"

FLASH!!!
See LATE BREAKING NEWS at the end of this research bulletin.

In the 1960's, the singer Jerry Lee Lewis noted that there was *A Whole Lot of Shakin' Goin' On!* He could well be describing today's telecommunications industry. INPUT's recently released industry report, *Telecommunications, Information Services Opportunities and Trends, 1995-2000*, examines an industry in the midst of change, with excellent opportunities for information services vendors. This research bulletin analyzes the forces affecting the telecommunications industry, notes the significant challenges facing telecommunications companies, and presents INPUT's forecast of the information services market opportunity in this market.

What's Happening in the Industry?

If you enjoy change, excitement and opportunity, the telecommunications industry is the place to be. The global communications industries are undergoing a fundamental restructuring—converging through mergers, partnerships, joint ventures and other forms of alliances. Common carriers are investing in CATV companies, foreign PTTs are aligning with U.S. common carriers, and RBOCs and other LECs (local exchange carriers) are seeking global long-distance affiliations.

In the rush to lock up technical solutions for global communications services, content is now becoming a key component—drawing attention through such deals as US West's acquisition of a 25% interest in Time Warner. Electronic Commerce (EC)—on-line purchasing and payment—has received attention from AT&T, MCI and Sprint, and also from a new competitor, Microsoft, with the communications potential inherent in Windows 95 and the Microsoft Network.

The Internet is an information resource that currently has an estimated 24 million users and is growing at a rapid pace. Many telecommunications companies, recognizing the potential for this resource, are providing access to the Internet, developing software that can search the Internet for desired information or setting up and operating "storefronts" for Internet-delivered products and services. Almost all communications industry companies are developing strategies and plans for taking advantage of the Internet

and other communications-based information phenomena, such as the World Wide Web.

Broadband access to the home (also called Video Dial Tone) via fiber optic or other high capacity communications links is generating debate regarding what types of services these linkages will carry and, more importantly, what revenue base will pay for the basic capacity.

Exhibit 1 summarizes the industry trends noted above.

Exhibit 1

Key Telecommunications Industry Trends

- Global telecommunications convergence
- Content is becoming important
- Internet opportunities
- Broadband access opportunities

Source: INPUT

Technology

In addition to the broadband transmission capability noted above, technology is having an impact in other areas of the telecommunications industry.

AIN - Bellcore's Advanced Intelligent Network (AIN) software allows carriers to rapidly reconfigure or create and deploy new network service offerings using equipment from a variety of vendors.

Multimedia - Facilitated by increased bandwidth, multimedia services can encompass all forms of media, including audio, image, graphics, data and full-motion video.

Mobile Wireless - By converting from analog to digital multiplexing technology, the capacity of the radio spectrum allocated to wireless will increase by several hundred percent. Waiting to consume this increased capacity are the growing populations of PCS users and laptops with fax and data transmission capabilities. This topic is covered in detail in INPUT's 1994 report, *Wireless Telecommunications Marketplace.*

CATV Technologies - The most notable advances in this area are fiber optics and the increased bandwith they deliver, and switching technology and the software to support the operation, maintenance and billing requirements of these switching devices. New services such as high-definition TV (HDTV), multimedia and (eventually) 3D-TV all will require the large bandwidths possible with fiber optics.

Exhibit 2 summarizes the key enabling technologies:

Exhibit 2

Enabling Technologies

- Advanced Intelligent Network (AIN)
- Multimedia
- Mobile wireless
- CATV: Fiber optics and switching technologies

Source: INPUT

Common Carrier Issues

In addition to the overall telecommunications industry activities noted above, common carriers (as opposed to CATV or broadcast carriers) are facing their own challenges and opportunities. These include technology-driven opportunities for basic service diversification, new competitors, a changing regulatory environment (again!) and a growing market for second lines.

Service Diversification - Technology is providing more business opportunities for Local Exchange Carriers (LECs) to offer enhanced services to homes and businesses—including CATV and interactive TV.

Competition - Once protected by monopolistic regulatory license, the traditional "voice only" common carrier is an endangered species. Carriers are now routinely challenged by CATV-related voice and data services, cellular, Personal Communications Services (PCS), Competitive Access Providers (CAPs) and Interexchange Carriers (IXCs). Competition is at the price, service, content and functionality levels.

Regulatory Environment - An increasingly relaxed regulatory environment is allowing telecommunications companies the potential to acquire CATV services (outside their area of basic service operations), and content-related services such as electronic classified advertising and 900-service telephone numbers providing information on stocks and sports. This potential is being challenged in Congress, however, and could be subject to some additional limitations.

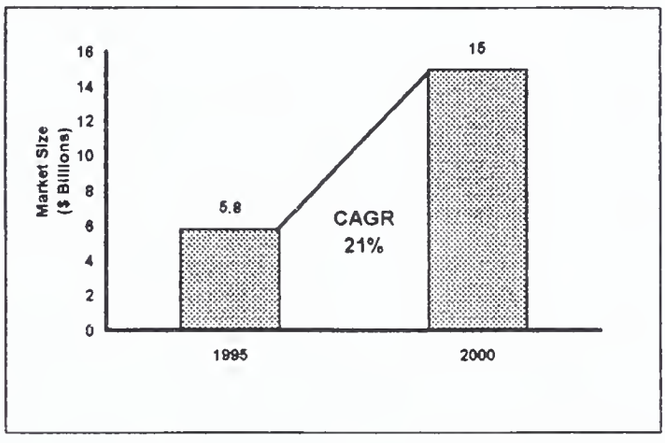
Second Lines - Thanks to home faxes, computers with modems and talkative teenagers, common carriers are experiencing a growing demand for second telephone lines where only one was installed before. Estimates are that between 5% and 10% of all lines installed are second lines and that this total is increasing every year.

Information Services Market

Given the growth, opportunity and "shakin' " going on in the telecommunications industry, it is not surprising that the demand for information services and products is growing at one of the highest rates in American industry. As noted in Exhibit 3, the market for information services will grow from $5.8 billion in 1995 to $15 billion by the year 2000. The resulting compound annual growth rate (CAGR) is 21%, up 2% from last year's 1994-1999 forecast CAGR of 19%.

Exhibit 3

Telecommunications Industry Information Services Market, 1995-2000



Source: INPUT

Periods of change, especially technology-driven change—being experienced today by the telecommunications industry—are generally also periods of strong growth in information services expenditures. To apply new technology to business needs, or to provide the IS infrastructure support required for firms whose business environment is changing rapidly, companies turn to service providers for the knowledge, skills and other resources that are in limited supply.

The five-year (1995-2000) overall growth of the information services market in the telecommunications industry—a 21% CAGR—is being driven by strong growth in the four product/service categories, shown in Exhibit 4.

Professional Services and Systems Integration expenditures are both forecast to grow at a 25% CAGR through 2000, while Network Services and Applications Software growth for the same period will be at a strong 22%. A comparison with the 1994-1999 figures for the same product service categories shows an increase in the growth rates of from 1% to 4%. In all areas, the increased growth is being driven by the growing needs of a dynamic, changing industry.

Exhibit 4

Selected Product/Service Growth Rates

Product/Service Category	1994-1999 CAGR	1995-2000 CAGR
Professional Services	21%	25%
Systems Integration	24%	25%
Network Services	20%	22%
Application Software	21%	22%

Source: INPUT

Vendor Opportunities

INPUT has identified key areas in which information services vendors can provide products and services that meet the needs of this dynamic industry. Of major importance are: the need to focus on integration, since integrated systems will be the key to success for carriers within the next few years; the need for open systems and multiple protocol support for connectivity products and services to facilitate linkages between carriers and their customers; the importance of flexible, scaleable software to support changing business needs; the importance of telecommunications industry knowledge; and the untapped potential of the Internet as a vehicle for services and as a supported resource.

The "whole lot of shakin' " taking place in the telecommunications industry translates to both challenge and opportunity for information services vendors. Challenge to anticipate or keep up with the changing needs of this dynamic, expanding marketplace; the opportunities that exist when a vendor can respond to the needs.

Late Breaking News!!

In a confirmation of the growing importance of partnerships, acquisitions and alliances to the increasingly deregulated telecommunications industry, on June 22, Sprint announced an agreement under which Deutsche Telekom and France Telecom will buy 20% of the company for slightly more than $4 billion. Each will invest about $2 billion for a 10% stake in Sprint. Approval of both U.S. and European regulatory bodies is still required. The Sprint/French/German global communications giant will have both the assets and client base to effectively compete in the world telecommunications marketplace with other European/U.S. alliances, namely AT&T with its UNIWORLD partners (the UNISOURCE consortium of Netherlands, Swiss, Swedish, etc. PTTs) and British Telecom/MCI,.

As INPUT notes—"A whole lot of shakin' goin' on!"

This Research Bulletin is issued as part of INPUT's U.S. Information Services Market Analysis Program. If you have questions or comments on this bulletin, please call your local INPUT organization or Robert L. Goodwin at INPUT, 1881 Landings Drive, Mountain View, CA 94043-0848, (415) 961-3300.

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A Publication from INPUT's U.S. Information Services Market Analysis Program

Vol. VI, No. 7 1995

The Telecommunication Competition and Deregulation Act - A Major Opportunity for Information Services

The Importance of the New Act

By any measure, the proposed Telecommunications Competition and Deregulation Act of 1995 is the most important piece of telecommunications legislation to be considered by Congress since the 1934 Communications Act. The Senate has already passed a telecommunications reform bill in June (by a decisive 81-18 vote), and the House is now considering a deregulation plan that is even more comprehensive.

Differences between the two legislative bodies are expected, and will have to be resolved, as will any problems with the Clinton administration. But since vice president Al Gore is the foremost spokesman for the information superhighway, and the national political pendulum is swinging away from regulation and towards deregulation or free competition for many industries, it is highly likely that the final legislation will soon be voted into law.

When approved, the new laws will change the way American business uses communications, and these changes will be more far-reaching and dramatic than the breakup of the Bell system in 1984. Exhibit 1 notes the major provisions of the Senate bill that has already received a strong endorsement.

Exhibit 1

Senate Bill Provisions

- Lets regional Bells sell long-distance services (if their local phone service is open competition)
- Allows cable and local phone companies to offer each other's services
- Most cable companies are freed from 1992 rate restrictions
- A federal-state board is to be created to ensure that rural communities have affordable services
- States are required to set local service price caps instead of using traditional revenue/cost-driven telephone rates
- Foreign ownership restrictions are eased for both telephone companies and television stations
- Electric utility holding companies are allowed to sell telecommunications services to consumers

Source: Various Media

Who Wins? Who Looses?

If the legislation becomes law, the winners will include:

Regional (or Baby) Bells - Can now get into long distance and cable service, but will also face competition for local delivery.

Cable Operators - Can offer local phone service, keep control of their decoders (TV-top units) and gain freedom from most rate restrictions imposed in 1992. The larger operators become potential acquirers of other communications resources, while the smaller ones will be viewed as acquisition targets—i.e. the traditional competitive food chain.

Big Broadcasters - Big broadcasting companies can grow bigger by acquiring radio and TV stations, and deregulation opens the way to foreign ownership and investment. Broadcasters will also have more control over advertising and be able to use available channel space for additional service offerings.

Electric Utilities - A new competitor which can sell telecommunications services to consumers, and vie for control of the "home automation" market with local cable companies. This is an especially interesting opportunity, since the cable companies will probably implement control through TV decoders, while utilities will more likely offer PC-based services.

Businesses and Consumers - The "users," both of whom will see a reduction in long distance rates. They will also benefit from one-stop shopping for all telecommunications services, and the lower-price service bundling alternatives that will be offered.

Losers will include:

Long Distance Companies - Look out, here come the Baby Bells and are they hungry!

Consumers - Without existing controls, cable rates will probably rise until aggressive competition moves in. Residential telecommunications rates are also more likely to go up than rates for business—which will now be wooed by telecommunications service providers who offer (and competitively price) one-stop shopping for all business needs.

Did You Notice Someone Missing?

You didn't? How about the information services provider?

INPUT's recently released report on the telecommunications industry, *Information Services Opportunities and Trends, 1995-2000, Telecommunications*, highlights an industry whose expenditures on information services are growing at an aggressive five-year compound annual growth rate (CAGR) of 21%—currently the highest in American industry.

Unchanged, this growth will catapult the telecommunications industry from the tenth largest U.S. information services market in 1995 to sixth largest in the year 2000. In terms of dollars, that growth will be from almost $5.8 billion in information services spending in 1995, to nearly $15 billion in 2000. The growth, however, although considering the impact of pending regulatory change, was predicated on a more traditional, considered and conservative approach to legislated telecommunications industry transformation. Now, given the strong interest afforded this legislation and the positive Congressional climate, unless something very unexpected occurs, change will be here this year! And the biggest winners will be the information services vendors who serve the telecommunications industry.

Why? Because information services is a product and service resource that thrives on change.

Information Services Opportunities

Consider the opportunities now being presented when the new legislation passes:

Acquisitions and Consolidations - Both imply changes in the information systems (IS) environment: diverse systems to combine; computer centers to bring together or off-load to an outsourcer; or similar applications running in different environments that now must either be consolidated or at least communicate with each other. These realities are opportunities for outsourcing, systems integrations and professional services.

Billing for Services You Never Had Before - One possibility of the new legislation is that almost everybody can offer everything...but, can you bill for it? Long distance carriers and regional Bell operating companies have perfected the detailed billing system—or deal with a vendor that offers such a system. Communications companies offering new, expanded services will now have to provide the kind of detailed billing that businesses today have come to expect—even demand! They'll need to break down costs by department, accounting code, division, etc. Who do you call? Your professional services, processing services or applications software experts—information services vendors all.

New Products and Services - Unfettered competition stimulates the business environment and will certainly lead to a variety of new product offerings, re-packaging of old products, and consolidation of various products into product groupings or suites. These activities all represent new market opportunities for product and service vendors.

Telecommunications-based products and services which will experience stronger growth in a deregulated, cost-competitive environment include multimedia offerings, electronic commerce applications, and on-line banking and retail consumer-oriented applications. If telecommunications companies offer security and billing services, these too will need to be designed (or purchased) and implemented.

The increased market opportunity can be sized by considering the effects of changes in the current five-year compound annual growth rate forecast for the telecommunications industry's spending on information services from 1995 to 2000. As noted earlier, INPUT's current CAGR for this industry is 21%—the highest of all U.S. industries. Exhibit 2 notes the potential increase in total information services spending for the telecommunications industry (for the period 1995 to 2000) of incremental increases in the growth rate (CAGR) of 1%, 2%, 5% and 10%.

Exhibit 2

Potential Increase in the Total Information Services Market: 1995-2000

CAGR 95-00 (%)	Incremental Change (%)	Increase in Total Info. Svcs. Market: 1995-2000 ($B)
21 %	(Base Value)	-
22%	+ 1%	2.2
23%	+ 2%	3.8
26%	+ 5%	8.6
31%	+ 10%	17.6

Source: INPUT

A modest 1% increase in the rate of growth of average annual information services spending due to regulatory changes will yield an increase in $2.2 billion in the total market from 1995 to the year 2000. At a 10% increase, the market is expanded by $17.6 billion for the forecast period.

Modest or aggressive, a potential increase in total information services spending of from $2.2 billion to $17.6 billion in the telecommunications industry for the next five years offers an outstanding opportunity for information services vendors.

Conclusions

As noted in INPUT's last bulletin, which also examined the telecommunications industry, there's "a whole lot of shakin' goin' on!" Change is occurring at a rapid rate, and the new telecommunications legislation, when enacted, will only increase the level of competition and pace of change.

With change comes opportunity for information services vendors—the opportunity to help the companies in the telecommunications industry respond to change and position themselves for a more competitive marketplace. The return (or reward) for this industry support is up to $18 billion in incremental new revenues for information services vendors for the balance of this decade!

Such legislation-driven change comes rarely, and vendors should position themselves to best take advantage of it. The rewards will be great, and failure to respond to the new realities of this industry could cause complacent vendors to lose market share.

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Vol. VI, No. 8 1995

A New Look for the Utilities Industry - Competitive and Cost-Conscious!

The Changing Utility Environment

The monopolistic nature of utilities suggests the absence of competition and, for many years, this was true. In the past few years, however, it has become increasingly apparent that the traditional conservative style of many utilities has given way to an era of intensifying competition. In fact, the preparation for a competitive environment has been the dominant element in most utilities' strategies, and includes considerations of downsizing and cultural change.

This re-orienting, of a traditionally conservative business segment, will have significant implications for the industry and will create significant new opportunities for information services vendors.

Increasing Competition

Contrary to their monopolistic image, however, there has always been *de facto* competition between utilities. Traditional areas of competition include:

- *Gas versus Electric* - This area of competition is hardly new—consider the variety of home appliances that offer the choice of one or the other as a power source. But this more visible home market is not the primary arena in which gas/electric competition takes place. The largest and most important area of competition is in the industrial and heating/air conditioning markets. Gas companies continue to be the more aggressive marketers.

- *Independent Power Producers(IPPs) and Cogenerators* - Encouraged by federal regulators, independent power producers and cogenerators are an important area of utility competition. Both of these entrants tend to use gas as fuel for their generators, and the result is a ratchet effect between electric and gas rates.

- *Non-Utility Generators (NUGs)* - To promote competition, the government requires utilities to purchase some of their electric power resource from non-utility power generators or NUGs. The energy generated by this resource now accounts for more than 10% of the national electric power output.

Continuing federal emphasis on deregulation (as exemplified by the Energy Policy Act of

1992 and FERC Order 636 of the same year) and the potential for further changes in the utility industry environment, are creating additional incentives for utilities to become more competitive.

Cost Containment

To deal with a competitive world, utilities have fallen in line with much of corporate America in focusing on the cost side of the equation. For many years, utilities were regarded as "cost-plus" businesses. In effect, that is essentially the nature of their regulatory pact with state and federal agencies that traded monopoly status for the obligation to serve. But now, both philosophies (serving and monopoly) are under intense pressure.

Today, many power utilities have as their key objective to become the low cost producer in their region. This is a worthy business objective, as long as profitability is maintained. As can be seen in Exhibit 1, there exists a wide variation in electrical energy costs, as measured on a regional basis.

The cost variations noted in Exhibit 1 underscore the challenges of increased competition. In addition to growing intra-regional competition, the inter-regional residential cost variances offer a potential for competitive impacts from NUG's and utilities with excess capacity in lower cost regions.

Utilities Respond to Competition

As utilities adjust their strategies and tactics to a more competitive environment, a number of changes are taking place:

Exhibit 1

Average Residential Electrical Costs, by Region

Rank	Region	Cents/Kwh
1	Northeast	13.03
2	New England	11.94
3	Pacific	11.16
4	Central Plains	9.01
5	Mid-Atlantic	8.99
6	Midwest	8.82
7	Southwest	8.77
8	Southern	7.96
9	Rocky Mountains	7.18
10	Northwest	5.57

Source: INPUT and Industry Statistics

- *The Resurrection of Marketing* - As the larger utility customers recognize that there are alternatives to local utilities, the local utility companies are reintroducing true marketing into their methods and organizations.

- *Culture Change* - Utilities realize that they must change their fundamental culture to be successful in today's more competitive marketplace. Many of them are invoking cultural change through employee awareness and focus groups that emphasize customer service and business fundamentals.

- *Downsizing* - Most utilities have gone through at least one recent downsizing exercise. Many feel that more efforts are required for an industry that has just enjoyed a lengthy period of non-competitive monopoly and cost-plus pricing.

Impact on Information Systems

Utility information systems groups can generally be regarded as supporting three key areas of utility activity—or applications areas. They are: commercial (normally accounting-related); engineering (concerned with utility facilities, expansion, planning and design/construction); and operations (the real-time management of the utility energy generation and distribution resources). Key areas of information systems change in support of these applications include:

- *Decentralization* - There is a clear shift away from centralized information systems, both physically and organizationally, as deregulation removes geographic operational constraints. Not surprisingly, client/server is today's hottest technology for utilities. In a recent INPUT study, *Client/Server Applications Trends - Utilities*, survey respondents noted that almost 60% of planned utility industry applications will use client/server architecture.

- *Re-Engineering* - The new emphasis on the "business" of utilities has also generated a strong interest in re-engineering processes and relating them to the goals of the utility. There is a consistent IS involvement in these activities, and some utilities have gone so far as to not fund any new application unless the related process has been re-engineered.

- *Expanding Application Portfolios* - Utilities applications portfolios are expanding and old applications are being reworked to reflect new requirements. Many existing applications are a legacy from an earlier, more stable environment, however, and now require significant updating. Key areas of application activity include those noted in Exhibit 2.

Exhibit 2

Key Utility Application Areas

- Customer Information Systems
- Marketing Support Systems
- Financial Systems
- Transmission and Distribution
- Facilities Management
- Supervisor Control and Data Acquisition (SCADA)
- Energy Management Systems (EMS)
- Engineering (including CAD/CAE)
- Power Plant Management
- Distribution Automation (DA)

Source: INPUT

- *User Department Development* - As with other businesses, utilities are experiencing a shift in which functional departments are assuming overall responsibility for the development of systems directly impacting their mission. The IS organization is involved, but responsibility rests with the using group, and there is a growing tendency to involve outside resources (information services) in analysis, implementation and ongoing operational activities.

Information Systems Objectives

As utilities consider the new environment in which they are operating, two key objectives for information systems have been defined:

- IS must adapt to the competitive world and be more responsive to the changing utility culture.

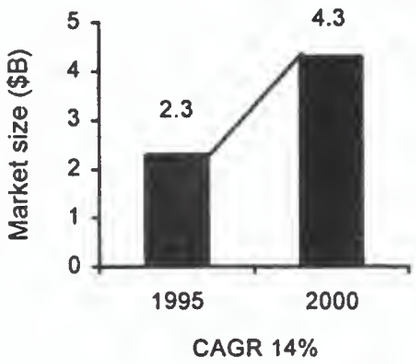
- The IS infrastructure must be flexible enough to meet the changing demands of the utility industry—a dramatic change from the staid, predictable environment of the past.

Information Services Market

The market for information services in the utilities industry is healthy and growing, as noted in Exhibit 3.

Exhibit 3

Utilities Industry
Information Services Market, 1995-2000



Source: INPUT

At the indicated five year compound annual growth rate (CAGR), the size of the market will almost double by the year 2000. The fastest growing product/service segments will be outsourcing (at a 23% CAGR), professional services (16%) and applications software (13%). *All* product/service categories will grow at 10% or better.

The largest market segments in the year 2000 will be systems integration, professional services and applications software.

A complete forecast and analysis is included in INPUT's new report, *Information Services Markets, 1995-2000, Utilities Industry*. The report also includes an analysis of the information services vendor competitive environment, and identifies more than 70 vendors to the utilities industry, and the applications areas in which they typically provide products and services.

Conclusions

Competitiveness and cost-consciousness have become an integral part of the utility industry's thinking, and the time is opportune for the use of outside products and services to enhance utility efficiency and improve competitive posture.

Given the age of the legacy application portfolio and its lack of flexibility in a rapidly changing industry, a substantial application development backlog exists in most utilities. In addition, IS organizations are under pressure to respond to the utilities need for efficiency.

As a result, the opportunities for information services-based solutions and information services vendors look better than they have for many years, and excellent for the remainder of this decade.

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Vol. VI, No. 9 1995

It's 12:01 a.m., 2000. Happy New Year! Will Your Software Work?

What's the Problem?

Everyone looks forward to the great celebration when, on New Year's Eve, December 31, 1999, the world welcomes both the new year and the next millennium. Marketing people are developing sales programs and product presentations designed to capture the imagination of both businesses and individuals who look forward to man's next thousand years. After all, this is the first time in modern history that we have passed one of time's thousand year milestones. Truly a significant event!

What about changing the year to 2000 in computer programs? It seems like such a trivial thing, especially today, with the millennium still four years away. After all, how difficult can it be to change the first two digits of the "year" field from "19" to "20"? Not too difficult, actually. The first two digits in a year field are assumed to be 19, at least in this century.

How about the last two digits? Well that's no problem is it? We've been adding "1" to the last year to get the next year ever since the first computer program was written. The trouble is that in all prior cases, next year's last two digits were always higher than last year's two digits. Not in the year 2000, though. Those two digits will be 00, and last year's will be 99—an arithmetic difference of 99. No big deal, though. A few lines of code should fix the problem, and besides, you have until 1999 before you have to start worrying about this "year" issue, right? Wrong, wrong and wrong.

It **is** a big deal for many companies, it may take much more than a "few lines of code," and if you do budgeting, forecasting or anything else that looks to the future (and who doesn't), it may already be too late for you to make a smooth transition to the next millennium, softwarewise.

More Details

A single programming change is no big deal (generally). You code, you test, you install, you monitor and you release when fully debugged. Dates, though, are ubiquitous. They are part of virtually every program in an application suite, and every suite in an enterprise's application portfolio. And one application links to another, and my transmitted data is used by your applications. And by the way, I'm not certain we still have

the source code for some of those legacy applications we never got around to changing.

See what we're saying? These are the kinds of considerations a single business might have about a single application. But business, at the information systems level, isn't simple anymore. Every enterprise has hundreds, perhaps thousands of programs, most containing a date field somewhere in their code. So does every government agency and so do most individuals, especially those people interacting with others across the Internet and similar communications pathways. These programs interact with each other, and they also interact with programs at other enterprises, homes or state, local or government offices.

All of us, businesses, governments and individuals, deal daily with dated documents in digital form—contracts, leases, bills, payment registers and thousands of other instruments and records. Not just in the United States, but all over the world.

Is This a Serious Problem?

This *is* a serious problem. Serious because it appears deceptively simple, and serious because it does (or can) affect almost every program a business runs. Those studying the issue place the worldwide cost of programming or reprogramming all systems and software to adjust for the year 2000 at from $50 billion to $500 billion—a one-time cost to fix a one-time problem.

INPUT puts the worldwide cost to fix only the date problem at a conservative $56 billion. This amount is the result of taking the estimated programming and implementation costs for the 10,000 largest firms—noted in Exhibit 1 as $28 billion worldwide—as representing 50% of the total market. The total market is then $56 billion.

Exhibit 1

Worldwide Cost to Fix Year 2000 Dates for the 10,000 Largest Companies

Cost Categories	Cost ($ Billion)
Programming changes	20
Implementation	8
Total Costs	28

Source: INPUT

No one knows for certain what the average inventory of active legacy applications is for a large company, but knowledgeable estimates have placed that number in the thousands. For companies that used COBOL extensively in the '60s and '70s, and are still running many of those programs, the main problem will be identifying a date field. The easy part will be changing it to reflect the new millennium.

The problem is the result of the COBOL programmer's ability to name a date field with any designation desired. Thus, simply scanning programs to find a field named "date" or "DMY" or some other logical name won't necessarily work with COBOL programs. Data dictionaries and careful documentation in common use over the last decade make it unlikely that recently developed or installed programs will have hard-to-find date fields, but for older programs ... it's hard to say. And determining how serious a problem a company is facing is a function of determining how many programs are in use, where the date fields are, and how dates are used in each program for such actions as date calculations, date comparisons, table sequencing, and sorting and creating reports.

For the average enterprise, the magnitude of the problem won't be known until the above

questions have been answered—that is, how many programs does a business have, what is the state of their documentation, where are the date fields and how dates are handled and processed in the program. And this data is needed not just for programs in daily use, but for any program that could be used—even on an occasional basis.

Until those questions are answered, the prudent business should assume that it has a serious problem.

What About Timing?

Should a company wait until 1999 to address any date problems? No! For many firms, the problem may already exist. Any business activity that deals in futures—leasing, forecasting or insurance, for instance—may well be pushing the 2000 boundary in meeting today's business needs for forecasting, financial analysis and business planning. Some credit cards may already carry a 2000 date, or will next year.

This is definitely something every business should consider right now. Each should:

- Determine if there is a date problem.
- Determine the magnitude of the problem
- Determine how to deal with the problem

What Are the Alternatives?

There are two basic approaches a business can take to determining the nature and size of its date problem and correcting indicated date fields and routines. The first is to deal with the problem using internal programming resources. The second approach is to seek outside help from an information services vendor.

Using internal resources may be a viable solution, but not a popular one. This is a one-time project that avoids a problem, but has no other significant benefit to the enterprise, unless, in the process of modifying date fields, a program is updated, modified or otherwise improved. The trouble is, most programming staffs are already fully committed to important internal projects. If the date issue is addressed, something else will slip. For most businesses, a more viable choice will be to seek outside help.

The Information Services Solution

Information services offer an excellent alternative for businesses which choose not to address the year 2000 problem with internal resources. By outsourcing any necessary conversion to a professional services firm or systems integrator, a company avoids potential disruption to its internal programming efforts and gains the benefits of a service specifically designed to efficiently address this unique problem.

One example of a firm that offers a formal, structured solution to the date problem (they call it "the problem of the century") is Cap Gemini America. Recognizing the opportunity hiding in the problem, Cap Gemini provides TRANSMILLENNIUM™ Services, an integrated offering combining sophisticated tools, technical expertise and a worldwide network of consultants. Using these resources, Cap Gemini determines the size of a company's "date" problem, designs a conversion plan which recognizes the client's business needs, performs the conversion, tests the converted programs, and "reinstalls" them in the client's program inventory. In the process of performing the conversion, at the client's request, Cap Gemini will also replace, redevelop or reengineer applications.

Computer Horizons Corp. (CHC) also sees a significant opportunity in the year 2000 problem and offers Signature 2000, a phased,

rigorous approach to implementing year 2000 programming changes. The five steps in the CHC solution include discovery, analysis, construction (a roadmap to performing program changes), testing and implementation.

Both Computer Horizons and Cap Gemini support their conversion services with strong marketing programs which are designed to both educate a company on the nature and scope of the potential date problem, and also identify their services solution as the best alternative for solving the problem.

Conclusion: Carpe Diem!

The year 2000 "date problem" offers a unique, one-time opportunity for information services firms to provide clients with a necessary service. The opportunity will last for four more years, although as time passes it will decrease. And whether the potential market is $50 billion or $500 billion, it is still substantial.

In a recent INPUT survey, 106 firms were asked the question, "are you addressing or do you plan to address year 2000 date problems in your company's programs?" Of the 90 companies that responded, 69 (77%) indicated they are addressing or will address the year 2000 problem, and 21 (or 23%) stated they would not. Both groups offer opportunities for information services vendors. Those who plan to address the year 2000 problem are potential clients—even if they currently plan to do the work themselves. Educate them as to why using an outside vendor is a better business solution for them.

For those who currently don't plan to do anything about the year 2000 issue, determine if their position is based upon an understanding of the problem and the certain knowledge that their programs will not be affected with dates of 2000 and beyond. If it isn't, or if they don't fully understand the problem, are just ignoring it, or plan to address it in the future, they too are prime candidates for the structured solutions offered by an information services vendor.

Vendors who see the date problem as a significant business opportunity must start now to educate their clients and prospects on the issue, develop standard tools and methodologies for date conversion, and make date conversion services a part of their service offerings (as has Cap Gemini and Computer Horizons). In other words, vendors, *carpe diem*—seize the day!

(By the way, information services vendors, will your programs work in the year 2000?)

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Worldwide Banking - INPUT's First Global Industry Study

The Worldwide Banking Report

For more than 20 years, INPUT has provided a unique view of U.S. vertical markets, with 15 annual reports segmenting the U.S. information services market into as many SIC-defined industry groupings. For the last five years, INPUT has also produced a *Worldwide Market Forecast*, identifying IT and information services spending in more than 30 countries and country groupings (e.g. Central Europe). In 1995, INPUT combined the two methodologies to produce its first worldwide industry report—*Worldwide Banking Information Services*—released in June of this year.

Providing a timely assessment of one of the largest global vertical industries—banking—the study analyzes the information services markets in 18 countries and 5 regions, and offers market projections for the period 1994 through 1999 for seven product/categories—professional services, systems integration, outsourcing, application software products, network services and turnkey systems.

Research for this report includes data gathered from more than 160 banks and 65 vendors regarding the current and projected use of information technology.

Interviews were conducted with banks from the following regions: North America, Europe, Asia/Pacific, Latin America and Middle East/Africa. In addition, interviews with industry experts provided an in-depth assessment of the global banking industry, and helped to identify the issues it faces and significant trends driving worldwide banking activities.

Major Trends and Issues

Other than the expected bank-specific concerns, the trends and issues identified by the banks interviewed fall into two broad categories—those that reflect worldwide concerns and trends, and those that are regional in nature. Exhibit 1, on the next page, summarizes the most significant global trends. Exhibit 2, notes regional trends and concerns.

Expanding bank activities both regionally and globally is the most important trend. Such expansion includes both offices and capabilities and is exemplified by the Bank of

Boston's establishment of trading centers in global locations.

Exhibit 1

Global Trends and Issues

Trend/Issue
Expansion of banks (global and regional)
BPR, cost-reduction
Increasing risk
Electronic banking

Source INPUT

In addition, banks are examining product and service profitability using BPR, and continue to have cost and profitability concerns. Dealing with increased risk is also a concern, and electronic banking is viewed as an important way of improving both customer services and bank profitability.

Exhibit 2

Regional Trends and Issues

Trend/Issue
Shortage of personnel
Unique standards
Lag in use of new technology
Regional or local regulations

Source INPUT

Exhibit 2 demonstrates that regional trends and issues tend (obviously) to be less global in nature. In many areas, such as Latin America and Middle East/Africa, skilled personnel are in short supply. For this reason, in addition to both cost and availability, countries in these areas also tend to lag behind the more advanced nations in the use of technology for banking applications. Banks also indicate that unique standards appropriate to their banking area, and the effects of regional or local regulations, add another layer of complexity to banking activities.

Banking Applications Interest

Interest in specific banking application areas vary by region. Bank respondents were asked to rate their interest in 16 specific application areas on a scale of 1 to 5, where 5 indicates high and 1 low interest. Exhibit 3 notes the application areas rated 4.0 or higher by banks in three or more regions. They are listed in descending order of interest as demonstrated by the (averaged) ratings.

Exhibit 3

Key Bank Application Areas

Application Area	Rating
Risk management	4.4
Loan systems	4.3
Electronic banking	4.2
Trading/Treasury	4.1

Source INPUT

Risk management had the highest interest level with a rating of 4.4. This is not unexpected, since the determination and evaluation of risk at all levels of banking activity is a fundamental concept of financial management. Areas of risk most commonly noted included credit authorization and monitoring, inter-country currency transactions and the evaluation of derivatives. The public became especially aware of this last risk management category after the much-publicized Orange County scandal, where pension funds and other sensitive holdings were invested in highly-leveraged derivatives and suffered severe setbacks when the derivative values declined.

As the business sophistication of a country grows, so do the demands placed upon its banking systems by both companies and individuals. Nowhere is this more evident than in the growth of electronic banking. Travelers want access to their funds or assets wherever they happen to be—in their home town, their country or anywhere in the world. Businesses are becoming conditioned to the electronic transfer of funds and data, and almost all regard such capability as a requirement in their financial dealings.

Banking Technology

Banks were asked to rate their interest in a series of technologies or technology considerations. Exhibit 4 notes the four issues receiving the highest ratings.

Exhibit 4

Bank Technology Issues

Technology Area	Rating
Timing of introduction of client/server	4.2
Implementation of electronic banking	3.8
Need for BPR prior to projects	3.7

Source INPUT

There is a high level of interest in how quickly the introduction of client/server technology should occur, and, once introduced, how rapidly it should be expanded across banking activities. One limiting factor, as noted earlier, is the shortage of skilled staff to implement the client/server architecture.

Other technology issues include implementation of electronic banking, a global trend, which is dependent upon a number of technologies, and the desire, by many banks, to apply business process reengineering (BPR) techniques to projects before they are started.

Banks note that the use of the Internet for electronic commerce, the growing use of ATMs, and automated telephone centers to provide services for depositors are also areas of interest.

Worldwide Banking Market

The worldwide banking market for information services for 1994 and 1999 is noted in Exhibit 5.

Exhibit 5

Worldwide Banking Market Forecast 1994 and 1999

Year	Market Size in US$
1994	$ 27 billion
1999	$ 48 billion

Source INPUT

The market growth from 1994 to 1999 is at a compound annual rate of 12%, or 1% higher than the 11% growth rate forecast by INPUT for the total worldwide information services market for the same period.

Fastest Growth - The fastest growing product/service categories of worldwide banking information services are outsourcing, systems integration (SI) and network services. Outsourcing offers the benefits of focusing on core banking activities and fixing costs. SI will facilitate both the introduction of new technology and the management of complex technical projects. Network services growth is being driven by needs for on-line financial information and support for electronic commerce and E-mail.

Largest Markets - For the worldwide banking industry, the largest information services product/service markets in 1999 will be outsourcing ($9 billion U.S.), professional

services ($11 billion) and processing services ($11 billion).

Conclusions

Based upon INPUT's survey of both banks and banking information services vendors, the growth in the worldwide market for banking information services is driven by the growth of the global banking industry. As people and businesses become more mobile, and telecommunications and other information technologies shrink distance and reduce time, the banking industry must upgrade to maintain its role as a key facilitator of trade. It also must provide the financial "lubricants" for personal, business and national economic activities.

Vendors can benefit from this growing worldwide banking market by recognizing the opportunities the growth provides, and taking proactive roles in establishing relationships with banks and recommending and participating in the conduct of IT studies and projects. The most successful vendors will be those that possess in-depth technical and banking industry knowledge. They must, however, present their capabilities to the appropriate IS and non-IS decision-makers in well-designed brochures, presentations and key banking forums in order to gain global business.

Banks in all countries must recognize that their customers are conducting more business either regionally or globally, and failure to offer capabilities to support such needs can limit institution growth. As technology supports an ever-increasing spectrum of banking capabilities, banks must ask themselves if they wish to perform all the information systems functions internally, or whether using information services for some or all needs is a better solution.

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This Research Bulletin is issued as part of INPUT's U.S. Information Services Market Analysis Program
If you have questions or comments on this bulletin, please call your local INPUT organization or Robert L. Goodwin at INPUT, 1881 Landings Drive, Mountain View, CA 94043-0848, (415) 961-3300.

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Research Bulletin

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Vol. VI, No. 10 1995

Worldwide Banking - INPUT's First Global Industry Study

The Worldwide Banking Report

For more than 20 years, INPUT has provided a unique view of U.S. vertical markets, with 15 annual reports segmenting the U.S. information services market into as many SIC-defined industry groupings. For the last five years, INPUT has also produced a *Worldwide Market Forecast*, identifying IT and information services spending in more than 30 countries and country groupings (e.g. Central Europe). In 1995, INPUT combined the two methodologies to produce its first worldwide industry report—*Worldwide Banking Information Services*—released in June of this year.

Providing a timely assessment of one of the largest global vertical industries—banking—the study analyzes the information services markets in 18 countries and 5 regions, and offers market projections for the period 1994 through 1999 for seven product/categories—professional services, systems integration, outsourcing, application software products, network services and turnkey systems.

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